WESTERN BIRDS

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WESTERN BIRDS

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WESTERN BIRDS

Volume 17, Number 1, 1986

CHECKLIST OF CALIFORNIA BIRDS – 1986

LAURENCE C. BINFORD, 330 Grove Street, Glencoe, Illinois 60022
California Bird Records Committee

This is the official California state checklist of birds as compiled by the Western Field Ornithologists' California Bird Records Committee (hereafter CBRC; see names of members in Acknowledgments). Several developments have rendered the last state checklist (Jones et al. 1981) obsolete. The American Ornithologists' Union (hereafter AOU) has published its Sixth Edition of the *Check-list of North American Birds* (AOU 1983) and its Thirty-fifth Supplement (AOU 1985), which contain numerous taxonomic innovations that were not, and could not have been, anticipated by Jones et al. (1981). In addition, the CBRC has eliminated the "unresolved category" of the state list, reevaluated most records of the species therein, and compiled a new list for all submitted species judged unacceptable for the state list (see Unaccepted Species). Finally, since 1981 a number of species have been added to or deleted from the state list.

Methods. Details on individual records of species mentioned in this introduction and in the unaccepted species list are either unpublished or may be found in the CBRC reports (3rd-9th) indicated in parentheses. Scientific names not in this introduction may be found on the state or unaccepted species lists.

The taxonomy of the AOU (1983, 1985) is followed without exception. For a comparison of the Sixth Edition (AOU 1983) with the Fifth (AOU 1957) and its supplements, see DeBenedictis (1983).

On the state list those seven species marked "I" have been introduced and subsequently become established as viable populations. The two species marked "E" formerly occurred naturally in the state but have since become extirpated. The 137 species indicated by an asterisk (*) are on the committee review list; in most cases, they have averaged four or fewer records per year over the last 10-year period. The CBRC requests documentation for all past unreviewed and future records of these species and of the subspecies Red-eyed (Yellow-green) Vireo (*Vireo olivaceus flavoviridis*), the species pair White Wagtail/Black-backed Wagtail, and the hybrid combination Blue-winged Warbler X Golden-winged Warbler.

State list. Jones et al. (1981) listed 541 species for California. Since then 20 species have been added on the basis of records judged acceptable by the CBRC: Anhinga (CBRC 9th report), Whooper Swan (9), American Black Duck (unpublished), Steller's Eider (8), Smew (7), Common Black-Hawk (9), Spotted Redshank (8), Gray-tailed Tattler (6), Little Curlew (9), Little Stint (9), Sooty Tern (8), Kittlitz's Murrelet (7), Least Auklet (6), Barred Owl (7), White-collared Swift (8), Ruby-throated Hummingbird (9), Brown Shrike (unpublished), Black-backed Wagtail (7), Rustic Bunting (9), and Brambling (9).

Elevation to species rank by the AOU (1985) has resulted in the addition of two other species: Clark's Grebe and Red-naped Sapsucker. The same publication separated Pacific Loon (*Gavia pacifica*) from Arctic Loon (*G. arctica*). In California the former is a common species; the latter, a largely Eurasian species, is unrecorded but perhaps expected, as *G. a. viridigularis* has been reported as far south as British Columbia in winter (AOU 1983).

Three species accepted by Jones et al. (1981) subsequently have been deleted and then readded: Cook's Petrel (deleted 7, readded 9), Yellow Wagtail (deleted 6, readded 8), and White Wagtail (deleted 6, readded 9). Finally, one species has been deleted: Acadian Flycatcher (7).

The above changes bring the California state list up to 562, a net increase of 21 species.

Unresolved category. The CBRC has reevaluated most records of the eight species formerly placed in the "unresolved category" (Jones et al. 1981) of the state list, with the following results: Cape Petrel, Black Vulture, Black-tailed Gull, and Green Violet-ear have been relegated to the unaccepted species list. Records for the Ringed Turtle-Dove (*Streptopelia risoria*) are pending. Records for Kittlitz's Murrelet and American Black Duck were rejected (3) previous to Jones et al. (1981) but have subsequently been accepted (7 and unpublished, respectively), and the species readded to the state list. Anhinga has been added (9) to the state list on the basis of a recent record.

Pending species. Records of 13 species not on the state list are currently pending before the CBRC (5 of these, based on other records, are on the unaccepted species list): Solander's Petrel (*Pterodroma solandri*), Townsend's Shearwater (*Puffinus auricularis*), Barnacle Goose (*Branta leucopsis*), White-tailed Ptarmigan (*Lagopus leucurus;* introduced), Common Ringed Plover (*Charadrius hiaticula*), Iceland Gull, Swallow-tailed Gull (*Creagrus furcatus*), Ringed Turtle-Dove (*Streptopelia risoria;* introduced), Ruddy Ground-Dove, Boreal Owl (*Aegolius funereus*), Magnificent Hummingbird, Three-toed Woodpecker, and Alder Flycatcher.

CALIFORNIA STATE LIST

GAVIIDAE

Red-thoated Loon
Gavia stellata
Pacific Loon
Gavia pacifica
Common Loon
Gavia immer
*Yellow-billed Loon
Gavia adamsii

PODICIPEDIDAE

*Least Grebe
Tachybaptus dominicus
Pied-billed Grebe
Podilymbus podiceps
Horned Grebe
Podiceps auritus
Red-necked Grebe
Podiceps grisegena
Eared Grebe
Podiceps nigricollis
Western Grebe
Aechmophorus occidentalis
Clark's Grebe
Aechmophorus clarkii

DIOMEDEIDAE

*Wandering Albatross
Diomedea exulans
*Short-tailed Albatross
Diomedea albatrus
Black-footed Albatross
Diomedea nigripes
Laysan Albatross
Diomedea immutabilis

PROCELLARIIDAE

Northern Fulmar
Fulmarus glacialis
*Mottled Petrel
Pterodroma inexpectata
*Cook's Petrel
Pterodroma cookii
*Stejneger's Petrel
Pterodroma longirostris
*Streaked Shearwater
Calonectris leucomelas
Pink-footed Shearwater
Puffinus creatopus
Flesh-footed Shearwater
Puffinus carneipes
*Greater Shearwater
Puffinus gravis
Buller's Shearwater
Puffinus bulleri
Sooty Shearwater
Puffinus griseus
Short-tailed Shearwater
Puffinus tenuirostris
Black-vented Shearwater
Puffinus opisthomelas

HYDROBATIDAE

*Wilson's Storm-Petrel
Oceanites oceanicus
Fork-tailed Storm-Petrel
Oceanodroma furcata
Leach's Storm-Petrel
Oceanodroma leucorhoa
Ashy Storm-Petrel
Oceanodroma homochroa
*Band-rumped Storm-Petrel
Oceanodroma castro
*Wedge-rumped Storm-Petrel
Oceanodroma tethys
Black Storm-Petrel
Oceanodroma melania
Least Storm-Petrel
Oceanodroma microsoma

PHAETHONTIDAE

*White-tailed Tropicbird
Phaethon lepturus
Red-billed Tropicbird
Phaethon aethereus
*Red-tailed Tropicbird
Phaethon rubricauda

SULIDAE

*Masked Booby
Sula dactylatra
Blue-footed Booby
Sula nebouxii
*Brown Booby
Sula leucogaster
*Red-footed Booby
Sula sula

PELECANIDAE

American White Pelican
Pelecanus erythrorhynchos

Brown Pelican
Pelecanus occidentalis

PHALACROCORACIDAE

Double-crested Cormorant
Phalacrocorax auritus
*Olivaceous Cormorant
Phalacrocorax olivaceus
Brandt's Cormorant
Phalacrocorax penicillatus
Pelagic Cormorant
Phalacrocorax pelagicus

ANHINGIDAE

*Anhinga
Anhinga anhinga

FREGATIDAE

Magnificent Frigatebird
Fregata magnificens

ARDEIDAE

American Bittern
Botaurus lentiginosus
Least Bittern
Ixobrychus exilis
Great Blue Heron
Ardea herodias
Great Egret
Casmerodius albus
Snowy Egret
Egretta thula
Little Blue Heron
Egretta caerulea
Tricolored Heron
Egretta tricolor
*Reddish Egret
Egretta rufescens
Cattle Egret
Bubulcus ibis
Green-backed Heron
Butorides striatus
Black-crowned Night-Heron
Nycticorax nycticorax
*Yellow-crowned Night-Heron
Nycticorax violaceus

THRESKIORNITHIDAE

*White Ibis
Eudocimus albus
White-faced Ibis
Plegadis chihi

Roseate Spoonbill
Ajaia ajaja

CICONIIDAE

Wood Stork
Mycteria americana

ANATIDAE

Fulvous Whistling-Duck
Dendrocygna bicolor
*Black-bellied Whistling-Duck
Dendrocygna autumnalis
Tundra Swan
Cygnus columbianus
*Whooper Swan
Cygnus cygnus
*Trumpeter Swan
Cygnus buccinator
Greater White-fronted Goose
Anser albifrons
Snow Goose
Chen caerulescens
Ross' Goose
Chen rossii
*Emperor Goose
Chen canagica
Brant
Branta bernicla
Canada Goose
Branta canadensis
Wood Duck
Aix sponsa
Green-winged Teal
Anas crecca
*Baikal Teal
Anas formosa
*American Black Duck
Anas rubripes
Mallard
Anas platyrhynchos
Northern Pintail
Anas acuta
*Garganey
Anas querquedula
Blue-winged Teal
Anas discors
Cinnamon Teal
Anas cyanoptera
Northern Shoveler
Anas clypeata
Gadwall
Anas strepera
Eurasian Wigeon
Anas penelope

American Wigeon
Anas americana
Canvasback
Aythya valisineria
Redhead
Aythya americana
Ring-necked Duck
Aythya collaris
*Tufted Duck
Aythya fuligula
Greater Scaup
Aythya marila
Lesser Scaup
Aythya affinis
*King Eider
Somateria spectabilis
*Steller's Eider
Polysticta stelleri
Harlequin Duck
Histrionicus histrionicus
Oldsquaw
Clangula hyemalis
Black Scoter
Melanitta nigra
Surf Scoter
Melanitta perspicillata
White-winged Scoter
Melanitta fusca
Common Goldeneye
Bucephala clangula
Barrow's Goldeneye
Bucephala islandica
Bufflehead
Bucephala albeola
*Smew
Mergellus albellus
Hooded Merganser
Lophodytes cucullatus
Common Merganser
Mergus merganser
Red-breasted Merganser
Mergus serrator
Ruddy Duck
Oxyura jamaicensis

CATHARTIDAE

Turkey Vulture
Cathartes aura
California Condor
Gymnogyps californianus

ACCIPITRIDAE

Osprey
Pandion haliaetus
Black-shouldered Kite
Elanus caeruleus
*Mississippi Kite
Ictinia mississippiensis
Bald Eagle
Haliaeetus leucocephalus
Northern Harrier
Circus cyaneus
Sharp-shinned Hawk
Accipiter striatus
Cooper's Hawk
Accipiter cooperii
Northern Goshawk
Accipiter gentilis
*Common Black-Hawk
Buteogallus anthracinus
*Harris' Hawk
Parabuteo unicinctus E
Red-shouldered Hawk
Buteo lineatus
Broad-winged Hawk
Buteo platypterus
Swainson's Hawk
Buteo swainsoni
*Zone-tailed Hawk
Buteo albonotatus
Red-tailed Hawk
Buteo jamaicensis
Ferruginous Hawk
Buteo regalis
Rough-legged Hawk
Buteo lagopus
Golden Eagle
Aquila chrysaetos

FALCONIDAE

American Kestrel
Falco sparverius
Merlin
Falco columbarius
Peregrine Falcon
Falco peregrinus
*Gyrfalcon
Falco rusticolus
Prairie Falcon
Falco mexicanus

PHASIANIDAE

Chukar
Alectoris chukar I

Ring-necked Pheasant
Phasianus colchicus I
Blue Grouse
Dendragapus obscurus
Ruffed Grouse
Bonasa umbellus
Sage Grouse
Centrocercus urophasianus
*Sharp-tailed Grouse
Tympanuchus phasianellus E
Wild Turkey
Meleagris gallopavo I
Gambel's Quail
Callipepla gambelii
California Quail
Callipepla californica
Mountain Quail
Oreortyx pictus

RALLIDAE

*Yellow Rail
Coturnicops noveboracensis
Black Rail
Laterallus jamaicensis
Clapper Rail
Rallus longirostris
Virginia Rail
Rallus limicola
Sora
Porzana carolina
*Purple Gallinule
Porphyrula martinica
Common Moorhen
Gallinula chloropus
American Coot
Fulica americana

GRUIDAE

Sandhill Crane
Grus canadensis

CHARADRIIDAE

Black-bellied Plover
Pluvialis squatarola
Lesser Golden-Plover
Pluvialis dominica
*Mongolian Plover
Charadrius mongolus
Snowy Plover
Charadrius alexandrinus
*Wilson's Plover
Charadrius wilsonia
Semipalmated Plover
Charadrius semipalmatus
*Piping Plover
Charadrius melodus
Killdeer
Charadrius vociferus
Mountain Plover
Charadrius montanus
*Eurasian Dotterel
Charadrius morinellus

HAEMATOPODIDAE

*American Oystercatcher
Haematopus palliatus
Black Oystercatcher
Haematopus bachmani

RECURVIROSTRIDAE

Black-necked Stilt
Himantopus mexicanus
American Avocet
Recurvirostra americana

SCOLOPACIDAE

Greater Yellowlegs
Tringa melanoleuca
Lesser Yellowlegs
Tringa flavipes
*Spotted Redshank
Tringa erythropus
Solitary Sandpiper
Tringa solitaria
Willet
Catoptrophorus semipalmatus
Wandering Tattler
Heteroscelus incanus
*Gray-tailed Tattler
Heteroscelus brevipes
Spotted Sandpiper
Actitis macularia
*Upland Sandpiper
Bartramia longicauda
*Little Curlew
Numenius minutus
Whimbrel
Numenius phaeopus
Long-billed Curlew
Numenius americanus
*Hudsonian Godwit
Limosa haemastica
*Bar-tailed Godwit
Limosa lapponica

Marbled Godwit
Limosa fedoa
Ruddy Turnstone
Arenaria interpres
Black Turnstone
Arenaria melanocephala
Surfbird
Aphriza virgata
Red Knot
Calidris canutus
Sanderling
Calidris alba
Semipalmated Sandpiper
Calidris pusilla
Western Sandpiper
Calidris mauri
*Rufous-necked Stint
Calidris ruficollis
*Little Stint
Calidris minuta
Least Sandpiper
Calidris minutilla
*White-rumped Sandpiper
Calidris fuscicollis
Baird's Sandpiper
Calidris bairdii
Pectoral Sandpiper
Calidris melanotos
Sharp-tailed Sandpiper
Calidris acuminata
Rock Sandpiper
Calidris ptilocnemis
Dunlin
Calidris alpina
*Curlew Sandpiper
Calidris ferruginea
Stilt Sandpiper
Calidris himantopus
*Buff-breasted Sandpiper
Tryngites subruficollis
Ruff
Philomachus pugnax
Short-billed Dowitcher
Limnodromus griseus
Long-billed Dowitcher
Limnodromus scolopaceus
*Jack Snipe
Lymnocryptes minimus
Common Snipe
Gallinago gallinago
Wilson's Phalarope
Phalaropus tricolor
Red-necked Phalarope
Phalaropus lobatus
Red Phalarope
Phalaropus fulicaria

LARIDAE

Pomarine Jaeger
Stercorarius pomarinus
Parasitic Jaeger
Stercorarius parasiticus
Long-tailed Jaeger
Stercorarius longicaudus
South Polar Skua
Catharacta maccormicki
Laughing Gull
Larus atricilla
Franklin's Gull
Larus pipixcan
*Little Gull
Larus minutus
*Common Black-headed Gull
Larus ridibundus
Bonaparte's Gull
Larus philadelphia
Heermann's Gull
Larus heermanni
Mew Gull
Larus canus
Ring-billed Gull
Larus delawarensis
California Gull
Larus californicus
Herring Gull
Larus argentatus
Thayer's Gull
Larus thayeri
*Lesser Black-backed Gull
Larus fuscus
Yellow-footed Gull
Larus livens
Western Gull
Larus occidentalis
Glaucous-winged Gull
Larus glaucescens
Glaucous Gull
Larus hyperboreus
Black-legged Kittiwake
Rissa tridactyla
Sabine's Gull
Xema sabini
Gull-billed Tern
Sterna nilotica
Caspian Tern
Sterna caspia
Royal Tern
Sterna maxima

Elegant Tern
Sterna elegans
*Sandwich Tern
Sterna sandvicensis
Common Tern
Sterna hirundo
Arctic Tern
Sterna paradisaea
Forster's Tern
Sterna forsteri
Least Tern
Sterna antillarum
*Sooty Tern
Sterna fuscata
Black Tern
Chlidonias niger
Black Skimmer
Rynchops niger

ALCIDAE

Common Murre
Uria aalge
*Thick-billed Murre
Uria lomvia
Pigeon Guillemot
Cepphus columba
Marbled Murrelet
Brachyramphus marmoratus
*Kittlitz's Murrelet
Brachyramphus brevirostris
Xantus' Murrelet
Synthliboramphus hypoleucus
Craveri's Murrelet
Synthliboramphus craveri
Ancient Murrelet
Synthliboramphus antiquus
Cassin's Auklet
Ptychoramphus aleuticus
*Parakeet Auklet
Cyclorrhynchus psittacula
*Least Auklet
Aethia pusilla
*Crested Auklet
Aethia cristatella
Rhinoceros Auklet
Cerorhinca monocerata
Tufted Puffin
Fratercula cirrhata
Horned Puffin
Fratercula corniculata

COLUMBIDAE

Rock Dove
Columba livia I
Band-tailed Pigeon
Columba fasciata
Spotted Dove
Streptopelia chinensis I
White-winged Dove
Zenaida asiatica
Mourning Dove
Zenaida macroura
Inca Dove
Columbina inca
Common Ground-Dove
Columbina passerina

CUCULIDAE

*Black-billed Cuckoo
Coccyzus erythropthalmus
Yellow-billed Cuckoo
Coccyzus americanus
Greater Roadrunner
Geococcyx californianus
*Groove-billed Ani
Crotophaga sulcirostris

TYTONIDAE

Common Barn-Owl
Tyto alba

STRIGIDAE

Flammulated Owl
Otus flammeolus
Western Screech-Owl
Otus kennicottii
Great Horned Owl
Bubo virginianus
*Snowy Owl
Nyctea scandiaca
Northern Pygmy-Owl
Glaucidium gnoma
Elf Owl
Micrathene whitneyi
Burrowing Owl
Athene cunicularia
Spotted Owl
Strix occidentalis
*Barred Owl
Strix varia
Great Gray Owl
Strix nebulosa
Long-eared Owl
Asio otus
Short-eared Owl
Asio flammeus
Northern Saw-whet Owl
Aegolius acadicus

CAMPRIMULGIDAE

Lesser Nighthawk
Chordeiles acutipennis
Common Nighthawk
Chordeiles minor
Common Poorwill
Phalaenoptilus nuttallii
Whip-poor-will
Caprimulgus vociferus

APODIDAE

Black Swift
Cypseloides niger
*White-collared Swift
Streptoprocne zonaris
Chimney Swift
Chaetura pelagica
Vaux's Swift
Chaetura vauxi
White-throated Swift
Aeronautes saxatalis

TROCHILIDAE

*Broad-billed Hummingbird
Cynanthus latirostris
*Violet-crowned Hummingbird
Amazilia violiceps
*Blue-throated Hummingbird
Lampornis clemenciae
*Ruby-throated Hummingbird
Archilochus colubris
Black-chinned Hummingbird
Archilochus alexandri
Anna's Hummingbird
Calypte anna
Costa's Hummingbird
Calypte costae
Calliope Hummingbird
Stellula calliope
Broad-tailed Hummingbird
Selasphorus platycercus
Rufous Hummingbird
Selasphorus rufus
Allen's Hummingbird
Selasphorus sasin

ALCEDINIDAE

Belted Kingfisher
Ceryle alcyon

PICIDAE

Lewis' Woodpecker
Melanerpes lewis
*Red-headed Woodpecker
Melanerpes erythrocephalus
Acorn Woodpecker
Melanerpes formicivorus
Gila Woodpecker
Melanerpes uropygialis
Yellow-bellied Sapsucker
Sphyrapicus varius
Red-naped Sapsucker
Sphyrapicus nuchalis
Red-breasted Sapsucker
Sphyrapicus ruber
Williamson's Sapsucker
Sphyrapicus thyroideus
Ladder-backed Woodpecker
Picoides scalaris
Nuttall's Woodpecker
Picoides nuttallii
Downy Woodpecker
Picoides pubescens
Hairy Woodpecker
Picoides villosus
White-headed Woodpecker
Picoides albolarvatus
Black-backed Woodpecker
Picoides arcticus
Northern Flicker
Colaptes auratus
Pileated Woodpecker
Dryocopus pileatus

TYRANNIDAE

Olive-sided Flycatcher
Contopus borealis
*Greater Pewee
Contopus pertinax
Western Wood-Pewee
Contopus sordidulus
*Eastern Wood-Pewee
Contopus virens
*Yellow-bellied Flycatcher
Empidonax flaviventris
Willow Flycatcher
Empidonax trailii
Least Flycatcher
Empidonax minimus
Hammond's Flycatcher
Empidonax hammondii
Dusky Flycatcher
Empidonax oberholseri
Gray Flycatcher
Empidonax wrightii

Western Flycatcher
Empidonax difficilis
Black Phoebe
Sayornis nigricans
Eastern Phoebe
Sayornis phoebe
Say's Phoebe
Sayornis saya
Vermilion Flycatcher
Pyrocephalus rubinus
*Dusky-capped Flycatcher
Myiarchus tuberculifer
Ash-throated Flycatcher
Myiarchus cinerascens
*Great Crested Flycatcher
Myiarchus crinitus
Brown-crested Flycatcher
Myiarchus tyrannulus
*Sulphur-bellied Flycatcher
Miodynastes luteiventris
Tropical Kingbird
Tyrannus melancholicus
Cassin's Kingbird
Tyrannus vociferans
*Thick-billed Kingbird
Tyrannus crassirostris
Western Kingbird
Tyrannus verticalis
Eastern Kingbird
Tyrannus tyrannus
*Scissor-tailed Flycatcher
Tyrannus forficatus

ALAUDIDAE

*Eurasian Skylark
Alauda arvensis
Horned Lark
Eremophila alpestris

HIRUNDINIDAE

Purple Martin
Progne subis
Tree Swallow
Tachycineta bicolor
Violet-green Swallow
Tachycineta thalassina
Northern Rough-winged Swallow
Stelgidopteryx serripennis
Bank Swallow
Riparia riparia
Cliff Swallow
Hirundo pyrrhonota
Barn Swallow
Hirundo rustica

CORVIDAE

Gray Jay
Perisoreus canadensis
Steller's Jay
Cyanocitta stelleri
*Blue Jay
Cyanocitta cristata
Scrub Jay
Aphelocoma coerulescens
Pinyon Jay
Gymnorhinus cyanocephalus
Clark's Nutcracker
Nucifraga columbiana
Black-billed Magpie
Pica pica
Yellow-billed Magpie
Pica nuttalli
American Crow
Corvus brachyrhynchos
Common Raven
Corvus corax

PARIDAE

Black-capped Chickadee
Parus atricapillus
Mountain Chickadee
Parus gambeli
Chestnut-backed Chickadee
Parus rufescens
Plain Titmouse
Parus inornatus

REMIZIDAE

Verdin
Auriparus flavipes

AEGITHALIDAE

Bushtit
Psaltriparus minimus

SITTIDAE

Red-breasted Nuthatch
Sitta canadensis
White-breasted Nuthatch
Sitta carolinensis
Pygmy Nuthatch
Sitta pygmaea

CERTHIIDAE

Brown Creeper
Certhia americana

TROGLODYTIDAE

Cactus Wren
Campylorhynchus brunneicapillus
Rock Wren
Salpinctes obsoletus
Canyon Wren
Catherpes mexicanus
Bewick's Wren
Thryomanes bewickii
House Wren
Troglodytes aedon
Winter Wren
Troglodytes troglodytes
*Sedge Wren
Cistothorus platensis
Marsh Wren
Cistothorus palustris

CINCLIDAE

American Dipper
Cinclus mexicanus

MUSCICAPIDAE

*Dusky Warbler
Phylloscopus fuscatus
Golden-crowned Kinglet
Regulus satrapa
Ruby-crowned Kinglet
Regulus calendula
Blue-gray Gnatcatcher
Polioptila caerulea
Black-tailed Gnatcatcher
Polioptila melanura
*Northern Wheatear
Oenanthe oenanthe
Western Bluebird
Sialia mexicana
Mountain Bluebird
Sialia currucoides
Townsend's Solitaire
Myadestes townsendi
*Veery
Catharus fuscescens
*Gray-cheeked Thrush
Catharus minimus
Swainson's Thrush
Catharus ustulatus
Hermit Thrush
Catharus guttatus
*Wood Thrush
Hylocichla mustelina
*Rufous-backed Robin
Turdus rufopalliatus
American Robin
Turdus migratorius
Varied Thrush
Ixoreus naevius
Wrentit
Chamaea fasciata

MIMIDAE

*Gray Catbird
Dumetella carolinensis
Northern Mockingbird
Mimus polyglottos
Sage Thrasher
Oreoscoptes montanus
Brown Thrasher
Toxostoma rufum
Bendire's Thrasher
Toxostoma bendirei
*Curve-billed Thrasher
Toxostoma curvirostre
California Thrasher
Toxostoma redivivum
Crissal Thrasher
Toxostoma crissale
Le Conte's Thrasher
Toxostoma lecontei

MOTACILLIDAE

*Yellow Wagtail
Motacilla flava
*White Wagtail
Motacilla alba
*Black-backed Wagtail
Motacilla lugens
*Red-throated Pipit
Anthus cervinus
Water Pipit
Anthus spinoletta
*Sprague's Pipit
Anthus spragueii

BOMBYCILLIDAE

Bohemian Waxwing
Bombycilla garrulus
Cedar Waxwing
Bombycilla cedrorum

PTILOGONATIDAE

Phainopepla
Phainopepla nitens

LANIIDAE

*Brown Shrike
Lanius cristatus
Northern Shrike
Lanius excubitor
Loggerhead Shrike
Lanius ludovicianus

STURNIDAE

European Starling
Sturnus vulgaris I

VIREONIDAE

*White-eyed Vireo
Vireo griseus
Bell's Vireo
Vireo bellii
Gray Vireo
Vireo vicinior
Solitary Vireo
Vireo solitarius
*Yellow-throated Vireo
Vireo flavifrons
Hutton's Vireo
Vireo huttoni
Warbling Vireo
Vireo gilvus
*Philadelphia Vireo
Vireo philadelphicus
Red-eyed Vireo
Vireo olivaceus

EMBERIZIDAE

*Blue-winged Warbler
Vermivora pinus
*Golden-winged Warbler
Vermivora chrysoptera
Tennessee Warbler
Vermivora peregrina
Orange-crowned Warbler
Vermivora celata
Nashville Warbler
Vermivora ruficapilla
Virginia's Warbler
Vermivora virginiae
Lucy's Warbler
Vermivora luciae
Northern Parula
Parula americana
Yellow Warbler
Dendroica petechia
Chestnut-sided Warbler
Dendroica pensylvanica
Magnolia Warbler
Dendroica magnolia
Cape May Warbler
Dendroica tigrina
Black-throated Blue Warbler
Dendroica caerulescens
Yellow-rumped Warbler
Dendroica coronata
Black-throated Gray Warbler
Dendroica nigrescens
Townsend's Warbler
Dendroica townsendi
Hermit Warbler
Dendroica occidentalis
Black-throated Green Warbler
Dendroica virens
*Golden-cheeked Warbler
Dendroica chrysoparia
Blackburnian Warbler
Dendroica fusca
*Yellow-throated Warbler
Dendroica dominica
*Grace's Warbler
Dendroica graciae
*Pine Warbler
Dendroica pinus
Prairie Warbler
Dendroica discolor
Palm Warbler
Dendroica palmarum
Bay-breasted Warbler
Dendroica castanea
Blackpoll Warbler
Dendroica striata
*Cerulean Warbler
Dendroica cerulea
Black-and-white Warbler
Mniotilta varia
American Redstart
Setophaga ruticilla
*Prothonotary Warbler
Protonotaria citrea
*Worm-eating Warbler
Helmitheros vermivorus
Ovenbird
Seiurus aurocapillus
Northern Waterthrush
Seiurus noveboracensis
*Louisiana Waterthrush
Seiurus motacilla
*Kentucky Warbler
Oporornis formosus
*Connecticut Warbler
Oporornis agilis

*Mourning Warbler
Oporornis philadelphia
MacGillivray's Warbler
Oporornis tolmiei
Common Yellowthroat
Geothlypis trichas
Hooded Warbler
Wilsonia citrina
Wilson's Warbler
Wilsonia pusilla
Canada Warbler
Wilsonia canadensis
*Red-faced Warbler
Cardellina rubrifrons
Painted Redstart
Myioborus pictus
Yellow-breasted Chat
Icteria virens
Hepatic Tanager
Piranga flava
Summer Tanager
Piranga rubra
*Scarlet Tanager
Piranga olivacea
Western Tanager
Piranga ludoviciana
*Northern Cardinal
Cardinalis cardinalis
*Pyrrhuloxia
Cardinalis sinuatus
Rose-breasted Grosbeak
Pheucticus ludovicianus
Black-headed Grosbeak
Pheucticus melanocephalus
Blue Grosbeak
Guiraca caerulea
Lazuli Bunting
Passerina amoena
Indigo Bunting
Passerina cyanea
*Varied Bunting
Passerina versicolor
*Painted Bunting
Passerina ciris
Dickcissel
Spiza americana
Green-tailed Towhee
Pipilo chlorurus
Rufous-sided Towhee
Pipilo erythrophthalmus
Brown Towhee
Pipilo fuscus
Abert's Towhee
Pipilo aberti

*Cassin's Sparrow
Aimophila cassinii
Rufous-crowned Sparrow
Aimophila ruficeps
American Tree Sparrow
Spizella arborea
Chipping Sparrow
Spizella passerina
Clay-colored Sparrow
Spizella pallida
Brewer's Sparrow
Spizella breweri
*Field Sparrow
Spizella pusilla
Black-chinned Sparrow
Spizella atrogularis
Vesper Sparrow
Pooecetes gramineus
Lark Sparrow
Chondestes grammacus
Black-throated Sparrow
Amphispiza bilineata
Sage Sparrow
Amphispiza belli
Lark Bunting
Calamospiza melanocorys
Savannah Sparrow
Passerculus sandwichensis
*Baird's Sparrow
Ammodramus bairdii
Grasshopper Sparrow
Ammodramus savannarum
*Le Conte's Sparrow
Ammodramus leconteii
*Sharp-tailed Sparrow
Ammodramus caudacutus
Fox Sparrow
Passerella iliaca
Song Sparrow
Melospiza melodia
Lincoln's Sparrow
Melospiza lincolnii
Swamp Sparrow
Melospiza georgiana
White-throated Sparrow
Zonotrichia albicollis
Golden-crowned Sparrow
Zonotrichia atricapilla
White-crowned Sparrow
Zonotrichia leucophrys
Harris' Sparrow
Zonotrichia querula
Dark-eyed Junco
Junco hyemalis

McCown's Longspur
Calcarius mccownii
Lapland Longspur
Calcarius lapponicus
Chestnut-collared Longspur
Calcarius ornatus
*Rustic Bunting
Emberiza rustica
*Snow Bunting
Plectrophenax nivalis
Bobolink
Dolichonyx oryzivorus
Red-winged Blackbird
Agelaius phoeniceus
Tricolored Blackbird
Agelaius tricolor
Western Meadowlark
Sturnella neglecta
Yellow-headed Blackbird
Xanthocephalus xanthocephalus
Rusty Blackbird
Euphagus carolinus
Brewer's Blackbird
Euphagus cyanocephalus
Great-tailed Grackle
Quiscalus mexicanus
*Common Grackle
Quiscalus quiscula
Bronzed Cowbird
Molothrus aeneus
Brown-headed Cowbird
Molothrus ater
Orchard Oriole
Icterus spurius
Hooded Oriole
Icterus cucullatus
*Streak-backed Oriole
Icterus pustulatus
Northern Oriole
Icterus galbula
Scott's Oriole
Icterus parisorum

FRINGILLIDAE

*Brambling
Fringilla montifringilla
Rosy Finch
Leucosticte arctoa
Pine Grosbeak
Pinicola enucleator
Purple Finch
Carpodacus purpureus
Cassin's Finch
Carpodacus cassinii
House Finch
Carpodacus mexicanus
Red Crossbill
Loxia curvirostra
*White-winged Crossbill
Loxia leucoptera
*Common Redpoll
Carduelis flammea
Pine Siskin
Carduelis pinus
Lesser Goldfinch
Carduelis psaltria
Lawrence's Goldfinch
Carduelis lawrencei
American Goldfinch
Carduelis tristis
Evening Grosbeak
Coccothraustes vespertinus

PASSERIDAE

House Sparrow
Passer domesticus I

Unaccepted Species. This list is comprised of those 34 species for which all records submitted to and judged by the CBRC have been found unacceptable by reason of questionable identification (marked "i"), origin (i.e. possible escapees; marked "o"), or population viability (used only for unestablished introductions; marked "v"). For 5 of these species, additional records are pending (marked †; see also introduction). Numbers refer to CBRC reports.

Black-browed Albatross (*Diomedea melanophris*) 6i; Cape Petrel (*Daption capense*) 5i, 7i; Manx Shearwater (*Puffinus puffinus*) 9i, unpublished i; White-bellied Storm-Petrel (*Fregetta grallaria*) 5i; Great Cormorant (*Phalacrocorax carbo*) 4i; Chestnut-bellied Heron (*Agamia agami*) 4i; Spectacled Eider (*Somateria fischeri*) 3o; Masked Duck (*Oxyura dominica*) 3i; Black Vulture (*Coragyps atratus*) 3o, 6i, 9o; American Swallow-tailed Kite (*Elanoides forficatus*) 7i; Gray Hawk (*Buteo nitidus*) 9i; White-tailed Hawk (*Buteo albicaudatus*) 8i; Plain Chachalaca (*Ortalis vetula*) 5i; Gray Partridge (*Perdix perdix*) 8v; Greater Golden-Plover (*Pluvialis apricaria*) 5i; Wood Sandpiper (*Tringa glareola*) unpublished i; Bristle-thighed Curlew (*Numenius tahitiensis*) 4i; Temminck's Stint (*Calidris temminckii*) 9i; Black-tailed Gull (*Larus crassirostris*) 3o, 9o; †Iceland Gull (*Larus glaucoides*) 8i; Great Black-backed Gull (*Larus marinus*) 7i; Red-legged Kittiwake (*Rissa brevirostris*) 6i; †Ruddy Ground-Dove (*Columbina talpacoti*) 7o; Green Violet-ear (*Colibri thalassinus*) 9i; White-eared Hummingbird (*Hylocharis leucotis*) 3i; Magnificent Hummingbird (*Eugenes fulgens*) 3i, 5i; †Three-toed Woodpecker (*Picoides tridactylus*) 7i, 8i; Acadian Flycatcher (*Empidonax virescens*) 7i; †Alder Flycatcher (*Empidonax alnorum*) 3i; Gray Wagtail (*Motacilla cinerea*) 6i; Gray Silky-flycatcher (*Ptilogonys cinereus*) 7o; Swainson's Warbler (*Limnothlypis swainsonii*) 3i; Olive Warbler (*Peucedramus taeniatus*) 7i, 8i; White-collared Seedeater (*Sporophila torqueola*) 7o.

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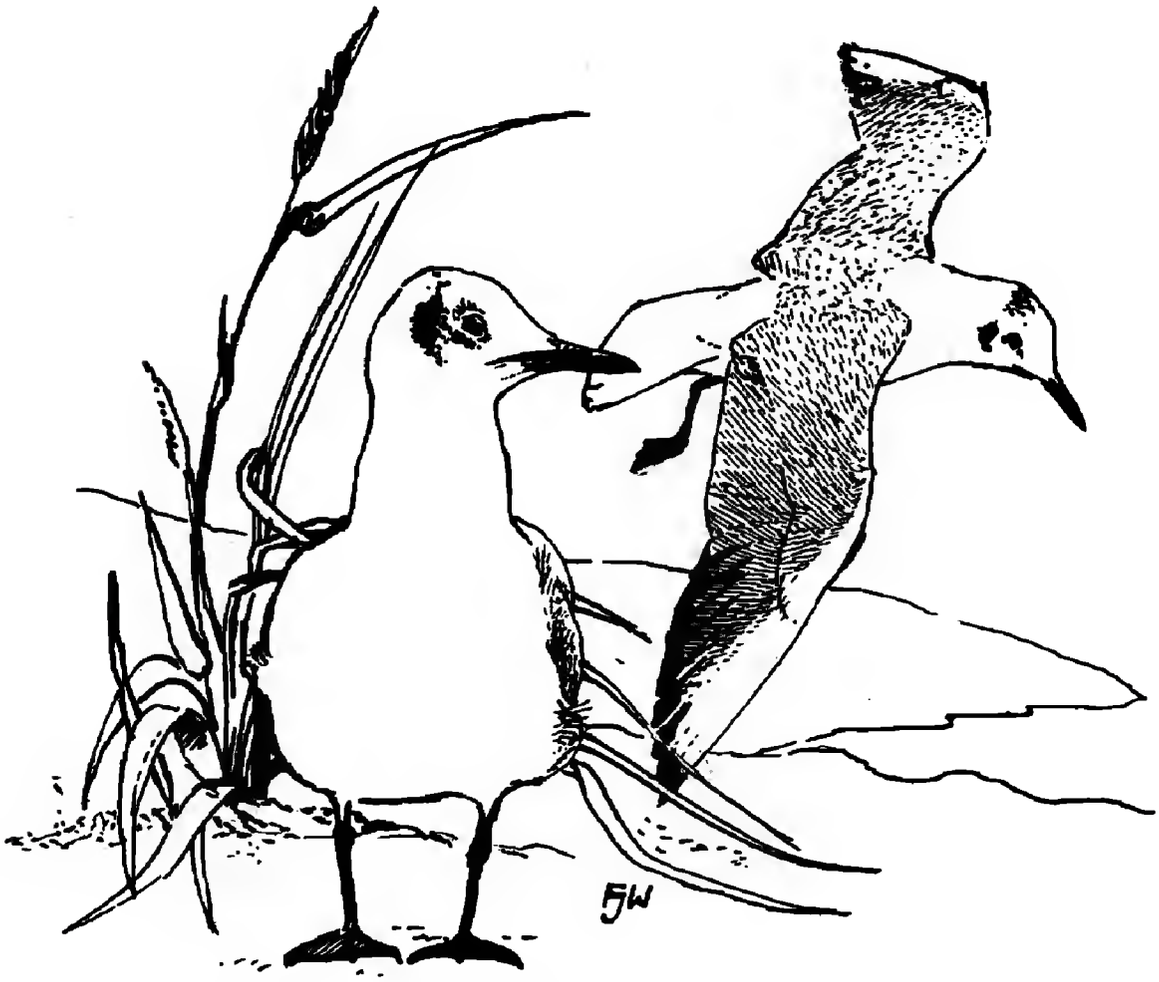

Common Black-headed Gulls, adults in winter plumage

Sketch by Frederick J. Watson

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HABITAT RELATIONSHIPS OF WINTER WRENS IN NORTHERN CALIFORNIA

CAMERON W. BARROWS, P.O. Box 478, LaQuinta, California 92253

The Winter Wren (*Troglodytes troglodytes*) has the most widespread distribution of any wren and is the only member of the Troglodytidae found in Asia, Europe and northern Africa, as well as North America. In Europe, where it is known simply as the Wren, this bird has been well studied (Armstrong 1955). In North America, however, there has been little investigation of Winter Wren ecology.

Despite their cosmopolitan distribution, Winter Wrens in California appear restricted in their habitat selection. Dawson (1925, Vol. 1:680-681) described the Winter Wren as an " . . . inhabitant of rugged stream beds . . . throughout the somber depths of the fir and Redwood forests . . . pine country being altogether too dry." Grinnell (1915: 160) referred to this wren as " . . . a common resident of the humid coast belt . . . sparingly in the northern high Sierra . . . occurs more widely in mid-winter." Beyond such general descriptions, information on the habitat of Winter Wrens in California comes from broad spectrum inventories. Breeding bird censuses published in *American Birds* and elsewhere are currently the only source of Winter Wren habitat data for this region.

In this paper I present data on the habitat relationships of Winter Wrens in northern California. I document the wrens' seasonal habitat selection in the context of forest age and temperature-moisture gradients.

STUDY AREA AND METHODS

I gathered most of the data presented here at the Nature Conservancy's Northern California Coast Range Preserve in Mendocino County. Interior sites where additional, opportunistic observations were made include the King Range Conservation Area and Butte Creek Old Growth Forest Reserve in Humboldt County, The Nature Conservancy's McCloud River Preserve in Shasta County and Yosemite National Park in Mariposa County. Most of the data from coastal areas were collected at the Jughandle State Reserve in Mendocino County. Additional, opportunistic observations were made of coastal Winter Wrens in the city of Arcata and at the Nature Conservancy's Lanphere-Christiansen Dunes Preserve in Humboldt County.

I made censuses of Winter Wrens from 1982 to 1984 at the Coast Range Preserve and Jughandle Creek sites. At these sites wrens were counted along predetermined transects which traversed representative habitats occurring in the region. The transect at the Coast Range Preserve was 4.8 km long; at Jughandle Creek it was 2.8 km long. Censuses were stratified between the fall-winter (late September to early April) and spring-summer (late April to early September) seasons. The Coast Range Preserve transect was censused 24 times during the fall-winter period, and 14 times during spring-summer. The Jughandle Creek transect was censused 14 times during the fall-winter season, and 5 times during the spring-summer.

Habitat types found at the coastal census site are characterized by the following descriptions:

Disturbed Pine Forest: A heavily disturbed habitat dominated by native Bishop Pine (*Pinus muricata*) and introduced Monterey Pine (*P. radiata*). Overall canopy closure of these conifers was less than 30%. Gaps in the canopy were filled with blackberry (*Rubus* sp.) and various introduced grasses.

Sitka Spruce Forest: A dense multi-layered conifer forest consisting of Sitka Spruce (*Picea sitchensis*), Bishop Pine, Grand Fir (*Abies grandis*), Western Hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*). Canopy closure for these species approached 100%. An extensive understory was comprised of Cascara (*Rhamnus purshiana*), Labrador Tea (*Ledum glandulosum*), rhododendron (*Azalea macrophyllum*), Oregon Grape (*Mahonia nervosa*), and Red and Blue huckleberry (*Vaccinium parvifolium* and *V. ovatum*).

Riparian: This habitat was restricted to a thin strip along Jughandle Creek and was dominated by Red Alder (*Alnus rubra*) and willows (*Salix* spp.). The understory here consisted of Sword Fern (*Polystichum munitum*) and Yellow Skunk Cabbage (*Lysichitum americanum*).

The inland census site at the Coast Range Preserve was within the mixed evergreen forest zone (Sawyer et al, 1977). The subdivisions of this forest where the census was conducted are characterized by the following descriptions:

Old Growth Forest: Generally north-facing slopes dominated by Douglas-fir and occasionally some Redwood (*Sequoia sempervirens*) trees aged 200 years and older. A well developed middle canopy existed, consisting of Tanoak (*Lithocarpus densiflora*), Canyon Live Oak (*Quercus chrysolepis*) and Madrone (*Arbutus menziesii*). The forest floor was littered with large downed logs; Blue Huckleberry, Oregon Grape and Sword Fern often occurred as a ground cover.

Young Growth Forest: A single layered canopy of hardwoods and conifers usually averaging much less than 200 years in age. Few if any large downed logs.

Meadow: Grassland areas with scattered shrubs, often with human dwellings present.

Riparian Forest: A thin strip of forest along the South Fork of the Eel River dominated by Red Alder and Big Leaf Maple (*Acer macrophyllum*). Sedges (*Carex* spp.) occurred along the waters edge.

Frequency of habitat types along the transects was determined by pacing the distance the transect passed through each habitat type.

RESULTS AND DISCUSSION

To quantify the Winter Wrens' habitat relationships, I initiated a series of censuses in both coastal and inland portions of the northern California Coast Range. A summary of Winter Wren censuses in the coastal habitat matrix is shown in Table 1. No significant shifts in the wrens' habitat preferences from the fall-winter to spring-summer seasons were noted. The spring-summer distribution of Winter Wrens was not significantly different from random. The

fall-winter distribution was not random; there appeared to be a slightly significant tendency for Winter Wrens to occur in the deciduous riparian forest and avoid the dense Sitka Spruce forest.

Overall, Winter Wrens in coastal habitats showed broad habitat preferences. These birds were observed regularly in young managed Redwood forests, urban settings and thickets within the salt spray zone along coastal bluffs.

A summary of the censuses conducted at the inland site are shown in Table 2. The distribution of Winter Wrens during the fall-winter months appeared to be random. In the spring-summer season Winter Wren habitat selection shifted significantly to an almost exclusive occurrence in the old growth forest type.

Table 1. Results of Winter Wren censuses conducted at Jughandle Creek State Reserve. Habitat descriptions are in the text.

		PERCENT WINTER WREN OCCURRENCE	
HABITAT TYPE	PERCENT HABITAT AVAILABILITY	FALL-WINTER	SPRING-SUMMER
Disturbed Pine Forest	53	51	43
Sitka Spruce Forest	33	24	36
Riparian Forest	14	25	21
Chi-square value		8.8	1.5
Significance level		$p<0.05$	$p<0.75$
Total number of observations		99	14

Table 2. Results of Winter Wren censuses conducted at the Northern California Coast Range Preserve. Habitat descriptions are in the text.

		PERCENT WINTER WREN OCCURRENCE	
HABITAT TYPE	PERCENT HABITAT AVAILABILITY	FALL-WINTER	SPRING-SUMMER
Old Growth Forest	55	60	92
Young Growth Forest	32	25	08
Meadow	10	13	0
Riparian Forest	3	2	0
Chi-square value		4.1	15.6
Significance level		$p=0.25$	$p<0.005$
Total number of observations		124	40

Corroborating data can be gathered from two sources. An examination of breeding bird censuses appearing in *American Birds* over the past 15 years revealed 17 censuses conducted in habitats similar to those covered in this study. Eleven of these 17 censuses were done in logged or young-growth mixed evergreen forests and none of these reported Winter Wrens. The remaining six censuses were conducted in old growth or mature Douglas-fir dominated forests; all of these reported breeding Winter Wrens. Also, a 3-year investigation of old growth wildlife habitat relationships in northern California determined a positive correlation between Winter Wren abundance and forest age (Martin Raphael pers. comm.). Winter Wrens appear to select the old growth conifer forests of California's interior Coast Range during the spring-summer months.

Following the wrens along their daily wanderings in summer, I found them more commonly away from creeks during early morning hours or on unseasonably cool days. During mid-day warm temperatures the wrens were almost always within the confines of creek beds with water. These creek bed habitats were more than 5-10° C cooler than surrounding non-old growth areas. Sixty-eight percent of my spring-summer observations of Winter Wrens were along creeks or creek beds; just 30% of my fall-winter observations were in these wetter areas. The Winter Wrens' northern distribution in North America (Robbins et al. 1966) adds further credence to the wrens' selection of cooler-wetter climes.

Selection for cool and moist habitats is just one of several hypotheses which could explain the Winter Wrens' distribution in California. Selection for habitats with higher food resources, less interspecific competition, or a higher density of nest sites are other possible explanations for the Winter Wrens' limited distribution. None of the above hypotheses were tested.

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MIGRATORY STATUS OF FLAMMULATED OWLS IN CALIFORNIA, WITH RECENT RECORDS FROM THE CALIFORNIA CHANNEL ISLANDS

PAUL W. COLLINS, Santa Barbara Museum of Natural History, 2559 Puesta Del Sol, Santa Barbara, California 93105

CHARLES DROST, Department of Environmental Studies, Wickson Hall, University of California, Davis, California 95616

GARY M. FELLERS, National Park Service, Point Reyes National Seashore, Point Reyes, California 94956

The Flammulated Owl (*Otus flammeolus*) is a widespread migratory species which breeds in mountains west of the Great Plains from southern British Columbia (Godfrey 1966, Cannings 1982) south to Vera Cruz, Mexico (AOU 1983). A number of recent papers provide a review of the distribution, habitat affinities and seasonal occurrences of Flammulated Owls in California (Johnson and Russell 1962; Winter 1974, 1979; Marcot and Hill 1980; Bloom 1983); however, there is still much to be learned about the migratory habits of this species. In this paper we discuss the migratory habits of the Flammulated Owl and provide data on the first records of the species on the California Channel Islands.

Flammulated Owls have not been recorded previously on any of the islands off the coast of southern California or Baja California, Mexico, despite recent surveys of island avifaunas (Johnson 1972, Hunt and Hunt 1974, Lynch and Johnson 1974, Jones and Diamond 1976, Jehl 1977, Boswall 1978, Diamond and Jones 1980, Jorgensen and Ferguson 1984, Jehl and Everett 1985, Jones et al. 1985) and incidental observations we made while conducting research on the Channel Islands during the last decade. Intensive long-term surveys of the avifauna on the Farallon Islands off the coast of central California have not recorded Flammulated Owls there either (DeSante and Ainley 1980).

RESULTS

Santa Barbara Island is one of the eight Channel Islands located off the coast of southern California (32°28'30"N, 119°02'00"W). Santa Barbara Island is 2.64 km² in size and 61 km from the nearest mainland. The topography of the island consists of gently sloping marine terraces which are dissected by several canyons. There are no trees and the dominant vegetation is annual grassland. In several scattered areas, notably the canyons, Giant Coreopsis (*Coreopsis gigantea*) and other coastal sage scrub species form a dense shrub cover.

On 16 October 1981 at 1415, Charles Drost flushed a Flammulated Owl in Graveyard Canyon on Santa Barbara Island. The bird flew low across the canyon and landed on a low vertical dirt bank where it sat motionless. Drost approached to within 10 m of the bird and photographed it (Figure 1).

The owl was gray-brown and finely barred on its upperparts, similar to the intermediate phase of the Western Screech-Owl (*Otus kennicottii*). It was about two-thirds the length of a Burrowing Owl (*Athene cunicularia*) and had gray-brown primaries and tail feathers which were barred with buff. There was a buff-colored row of round spots on the scapulars with a parallel row of narrower run-together black spots. The facial disk was buff with narrow black lines framing it on the side. Gray feathers formed a "V" outlining the disk from just above the eyes to the bill. The eyes were black. No ear tufts were seen, although there did appear to be a pair of small bumps on the top of the head where the ear tuft feathers should be.

The owl was observed continuously from 1415 until 1450 and was last seen at 1515. During this time it responded only by opening its eyes or turning its head to sudden low-pitched noises such as hissing or falling rocks. Following its initial flight, the owl made no further attempt to fly. The apparent tameness of this bird may have been a result of its being exhausted from its flight across the water barrier which separates Santa Barbara Island from the mainland. Although the minimum distance between Santa Barbara Island and the mainland is 61 km, it is likely that this particular bird could have crossed 80 to 100 km of open water if it left the mainland in the vicinity of Santa Barbara during its southward fall migration.

In spite of repeated surveys of Graveyard Canyon and surrounding areas in the following days the owl was not seen again. Drost spent an average of 20 days per month on Santa Barbara Island from 1981 through 1984, including an average of five days per month in Graveyard Canyon. Part of his fieldwork during this time involved searching for and making population counts of the owls, as well as systematically searching for the remains of birds which had died or been killed by avian predators.

On 26 May 1984 Gary Fellers found an intact, partially feathered, dried-out carcass (Santa Barbara Museum of Natural History 3141) of a diminutive owl in Graveyard Canyon on Santa Barbara Island. Comparison of the skeletal elements and wing feathers of this specimen with other members of the genus *Otus* revealed that it was definitely a Flammulated Owl. The smooth surface texture of the bones and the complete fusion of epiphyses suggested that this specimen was an adult. Measurements were as follows: wing chord 139 mm; exposed culmen 11.4 mm; and tarsometatarsus lengths 23.7 mm (right) and 23.5 mm (left). The tarsometatarsus lengths are within the 21.9 to 24.3 mm range recorded for Flammulated Owls (Woolfenden 1970).

The condition of the carcass suggests that it probably died 1 or 2 months prior to its discovery. This estimate is based on our studies of owl predation on Santa Barbara Island, in which we have tagged approximately 150 carcasses of owl-killed Xantus' Murrelets (*Synthliboramphus hypoleucus*), and observed how long it takes for such specimens to fade and weather. The lack of weathering and insect damage on the feathers of the owl, coupled with its intact condition, suggests that it had not died the previous fall and thus been exposed to weathering from winter storms. The specimen was on top of the previous winter's vegetation, and was not found during a search of the canyon in December 1983, nor in six additional trips into the canyon during the winter, even though it was in a relatively conspicuous location. The flight

feathers were slightly worn, but showed no sign of having been recently molted. Although the rectrices and body contour feathers had been badly damaged by the leakage of body fluids during the decomposition process, none of these feathers were ensheathed, or growing in, thus suggesting that the owl was not in an active molt at the time of its death. Adult Flammulated Owls are known to go through a complete body and wing molt in the late summer and early fall (Winter 1974, Bloom 1983). The condition of the wing feathers on this specimen suggests that this bird was probably a spring migrant.

Though it is a coincidence that both of these owls were in the same canyon on Santa Barbara Island, the evidence indicates it is highly unlikely that these observations were of the same bird. Our observations of decomposition rates for bird carcasses on Santa Barbara Island, and failure to find the carcass before May, both indicate that the second owl had not been dead for more than 2 months. If it was the same bird, one would have to assume that this owl survived on a small, treeless island for 2½ years without being detected in spite of ongoing research on owls and other terrestrial vertebrates. The research involved more than 750 days in the field by four biologists and included field work on all parts of the island, both during the day and at night.

Figure 1. Flammulated Owl (*Otus flammeolus*) photographed in Graveyard Canyon, Santa Barbara Island, Santa Barbara Co., California, on 16 October 1981.
Photo by Charles Drost

DISCUSSION

The Flammulated Owl is considered a common to locally very common breeding summer resident in California (Grinnell and Miller 1944; Winter 1974, 1979). It nests in areas of broken or open Transition and Canadian Zone montane forests where yellow pine (*Pinus ponderosa* or *P. jeffreyi*) or California Black Oak (*Quercus kelloggii*) are present along with some understory brush (Marshall 1939, 1967; Grinnell and Miller 1944; Winter 1974, 1979; Marcot and Hill 1980). In southern California, Flammulated Owls are known to nest in the San Gabriel, San Bernardino and San Jacinto mountains (Grinnell and Miller 1944, Winter 1974, Garrett and Dunn 1981) as well as on Mt. Pinos in Ventura County (Miller 1936) and Mt. Palomar in the Laguna Mountains of San Diego County (McCaskie 1971, Unitt 1984).

Records of transient Flammulated Owls away from their breeding habitat are uncommon for most of California, and coastal records of migrants are extremely rare (Winter 1974). At present there are only 13 known occurrences in California of Flammulated Owls recorded away from their preferred breeding habitats (Table 1). Seven of these records are fall migrants whereas five are spring migrants. Until now, the three specimen records from San Diego County represented the only known lowland coastal occurrences of this species in California.

The major fall migration of Flammulated Owls in western North America occurs from early September through late October (Phillips 1942, Winter 1974, Balda et al. 1975). The fall migration may continue until late November as evidenced by the occurrence of at least 12 November records from throughout the geographic range of this owl (Table 2). The fact that 8 of the 12 November records of this owl in North America are represented by specimens suggests that this species is not adapted to withstand the more severe weather of the late fall. Of the seven previous fall records of migrant Flammulated Owls in California all but one are from October (Table 1). The earliest fall record is 23 September 1974 and the latest is 31 October 1935. The 16 October sighting of a Flammulated Owl on Santa Barbara Island is only the third fall record of a migrant Flammulated Owl in coastal southern California (Banks 1964, Winter 1974).

Flammulated Owls occasionally become disoriented on long fall migratory flights and wander well outside their normal range. Most of the records of vagrants come from the late fall or winter (see Table 2). Glasgow et al. (1950) reported the capture of a Flammulated Owl on 2 January 1949 in Louisiana and Woolfenden (1970) reported a November specimen recorded from Shelby County, Alabama. The sighting of a Flammulated Owl at Reddington (=Redington) Beach, Florida, on 3 November 1976 (Edscorn 1979) represents the farthest that a Flammulated Owl has wandered from its normal range. There are numerous fall records of migrant Flammulated Owls from lowland habitats throughout the Southwest. For example, there are seven fall records of migrant Flammulated Owls from lowland habitats in Texas (Sutton 1960; Hubbard 1972; Oberholser 1974; Williams 1981, 1982, 1983; Webster 1981).

The major spring migratory movement of Flammulated Owls in the Southwest occurs from mid-April through mid-May (Balda et al. 1975).

Table 1. Records of migrant Flammulated Owls in California away from their breeding habitat. Each record represents one bird. C = caught, S = sighting only, Sp = specimen, P = photographed, H = heard only.

DATE	LOCATION	COUNTY	OBSERVER	STATUS	SOURCE
18 Jan 1885	Foothills NE of San Bernardino	San Bernardino	F. Ball	Sp	Stephens (1902)
Early Mar 1979	Tecopa	Inyo	?	H	Garrett & Dunn (1981)
28 Apr 1973	Pippit Flat, San Jacinto Mtns.	Riverside	?	S	Garrett & Dunn (1981)
18 May 1977	Deep Springs	Inyo	K. Garrett	S	Garrett & Dunn (1981), McCaskie (1977:1048)
26-27 May 1977	Base of Cottonwood Creek near Oasis	Inyo	P. Unitt	S	Garrett & Dunn (1981), McCaskie (1977:1048)
26 May 1984	Santa Barbara Isl., Graveyard Cyn.	Santa Barbara	G. Fellers	Sp	This study
1 Jul 1974	On beach 1 km N Santa Margarita River mouth	San Diego	P.H. Bloom	Sp	Bloom (1983)
23 Sep 1977	2 mi. SW Monticello Dam	Yolo	B. Boekelheide	S	Erickson & Morlan (1978:253)
4 Oct 1977	Near Westmorland	Imperial	D. Delaney	S	Garrett & Dunn (1981), McCaskie (1978:259)
10 Oct 1962	San Diego Bay on USS Tulare	San Diego	D.B. Ramage & D.R. Timm	C,Sp	Banks (1964)
16 Oct 1979	Near Woodland	Yolo	?	C, P	Laymon & Shuford (1980:197)
16 Oct 1981	Santa Barbara Isl., Graveyard Cyn.	Santa Barbara	C. Drost	S, P	This study
19-24 Oct 1981	Furnace Creek Ranch	Inyo	L.L. Norris	S, P	McCaskie (1982:218)
21 Oct 1971	San Diego area	San Diego	Ca. Fish & Game	C, Sp	Unitt (1984), Winter (1974)
31 Oct 1935	Univ. Farm at Davis	Yolo	J.T. Emlen	Sp	Emlen (1936)

Table 2. Late fall and winter records for Flammulated Owls in North America. See Table 1 for status codes.

STATE/PROVINCE	COUNTY	LOCALITY	DATE	OBSERVER	STATUS	SOURCE
Alabama	Shelby	(Montevallo?)	Nov 1953	G.E. Nelson	Sp	Woolfenden (1970)
Arizona	Maricopa	Sun City near Phoenix	4 Nov 1971	R. Herr	Sp	Monson (1972:639)
Arizona	Maricopa	Phoenix	16 Feb 1949	C. Stannard	Sp	Simpson and Werner (1958)
Arizona	Apache	Concho	13 Nov 1972	G. Israel	Sp	Monson (1973:98)
Arizona	Gila	Pinal Mtns. near Globe	22 Nov 1965	B. Jackson and S. Cook	S	Snider (1966:79)
Arizona	Yavapai	Lowland mesquite along Santa Maria River	22-24 Jan 1980	B. Millsap	H	Monson and Phillips (1981)
California	Tehama	Valentine Ridge	18 Nov 1984	Clark Blake	S	Sterling and Campbell (1985:98)
California	San Bernardino	Foothills NE of San Bernardino	18 Jan 1885	Forest Ball	Sp	Stephens (1902)
Colorado	Fremont	Penrose	10 Nov 1982	J.R. Watts	Sp	Kingery (1983:206)
Florida	Pinellas	Reddington Beach	4 Nov 1978	E. Hodgins	C, P	Edscorn (1979:170)
Gulf of Mexico		120 km SE Galveston, Texas	3 Nov 1976	J.B. Ortego	S	Purrington (1977:187)
Louisiana	West Baton Rouge	Sardine Point, Mississippi River below Baton Rouge	2 Jan 1949	L.L. Glasgow	Sp	Glasgow et al. (1950)
Texas	Lubbock	Lubbock	Early Nov 1950	M.F. Landwer	Sp	Sutton (1960)
Washington	Walla Walla	Between Walla Walla and Dixie	17 Nov 1979	G.W. Anderson	Sp	Rogers (1980:183)
Washington	Lincoln	Sprague Lake	20 Nov 1953	?	Sp	LaFave (1954)
British Columbia		S. shore Lake Okanagan at Penticton	Nov 1902*	A. Brooks	Sp	Brooks (1909)
British Columbia		At Penticton	24 Dec 1965	S.R. Cannings	S	Rogers (1966:443)

*Johnson (1963) suggests that this specimen represents a late October record rather than a November record.

Flammulated Owls arrive in southern California by the second week of April (Winter 1974). Until recently the earliest spring records were 18 April 1974 at Henness Ridge in Mariposa County (Winter 1979) and 19 April 1972 at China Camp in Monterey County (Winter 1974). The recordings of Flammulated Owls calling in early March 1979 at Tecopa in Inyo County (Garrett and Dunn 1981) and on the night of 23 March 1978 along Bluff Creek in Humboldt County (Marcot and Hill 1980) indicate that a few Flammulated Owls may arrive in California as early as March. There are a number of additional March records of Flammulated Owls from other states. Wauer (1973) reported that this species reaches Big Bend National Park in Texas as early as 30 March, and Rosenberg et al. (1981) reported the occurrence of a Flammulated Owl in the Zuni Mountains of west-central New Mexico on 15 March 1981. Flammulated Owls have been recorded as early as 9 March 1979 at the Bill Williams River Delta in Yuma County, Arizona (Monson and Phillips 1981), and on 26 March 1953 in the Catalina Mountains of southeastern Arizona (Monson and Phillips 1964, Phillips et al. 1964). The sighting of a Flammulated Owl north of Boulder, Colorado, from 5-28 March 1966 (Williams 1966) represents the earliest spring record of a Flammulated Owl north of Mexico.

The Santa Barbara Island specimen found on 26 May 1984 is only the second spring record of a migrant Flammulated Owl in lowland coastal southern California. Bloom (1983) documented finding the carcass of a Flammulated Owl on a beach in northern San Diego County on 1 July 1974. He suggested that this bird was an extremely late spring migrant. As discussed earlier, the Santa Barbara Island specimen probably represents a spring migrant which died on Santa Barbara Island in late March or April. This timing seems to fit with what we know about the condition of the carcass at the time of its discovery and the timing of the spring migration of Flammulated Owls in the Southwest.

The accumulation of records of Flammulated Owls in lowland areas away from their known breeding grounds, during the appropriate seasons for migration, has been used as evidence to suggest that this species exhibits a long-distance continental migration pattern (Phillips 1942, Winter 1974, Balda et al. 1975). In addition, the virtual absence of Flammulated Owls in known breeding areas from mid-November until early March, along with records of vagrant Flammulated Owls from Louisiana, Alabama, Florida and Texas, provide evidence that the majority of Flammulated Owls are probably long-distance migrants. If this owl were non-migratory, then it seems questionable that it could stray more than 1600 km from its known breeding range. It has been shown in other landbird migrants such as vireos and warblers that long-distance migrants are subject to larger navigational errors than short-distance migrants (DeBenedictis 1971).

Johnson (1963) has argued that Flammulated Owls do not make long-distance migrations to neotropical climates, but rather make a limited vertical migration and undergo periodic torpor during the winter. The accumulated evidence does not support this hypothesis. There are only five winter records of Flammulated Owls in all of North America (Table 2) in spite of efforts to locate wintering Flammulated Owls (Winter 1974, Marcot and Hill 1980). One would expect that if a substantial proportion of the population of such a

common owl (Marshall 1939, Winter 1974, Marcot and Hill 1980) was making only a vertical migration to lowland habitats, there should be a larger number of winter records from those areas. Furthermore, physiological work done by Banks (1964) and Ligon (see Winter 1974) demonstrate that Flammulated Owls do not have the ability to undergo periodic torpidity. The fact that 11 of the 17 late fall and winter records are represented by specimens (Table 2) further suggests that this owl is incapable of surviving the harsh weather which is found in its nesting habitat during the winter. In light of the above and the accumulation of records more than 1600 km from Flammulated Owl breeding grounds it is reasonable to conclude that the majority of Flammulated Owls are not spending the winter in the United States.

There are very few records of Flammulated Owls crossing water barriers. The sighting of a Flammulated Owl on an oil production platform located in the Gulf of Mexico off the coast of Louisiana approximately 120 km southeast of Galveston, Texas (Purrington 1977) represents the farthest that a Flammulated Owl has been recorded from the mainland. The Flammulated Owls on Santa Barbara Island were 61 km from the mainland. There are four additional records of Flammulated Owls crossing water barriers of less than 10 km. Hunn and Mattocks (1981) recorded a Flammulated Owl on 2 October 1980 on Mercer Island in Washington and Flammulated Owls were found on 5 October 1982 on Antelope Island in the Great Salt Lake, Utah (Kingery 1983), on 30 October 1980 on Padre Island, at Port Aransas, Texas (Webster 1981), and on 4 November 1978 on Sand Key, at Redington Beach, Pinellas County, Florida (Edscorn 1979). In addition, two of the three coastal records of Flammulated Owls in southern California may be the result of birds wandering over water. Bloom (1983) suggested that the Flammulated Owl he found on a beach in northern San Diego County may have wandered out to sea and died before washing ashore. It is also possible that the Flammulated Owl reported aboard a vessel in San Diego Bay, on 10 October 1962 (Banks 1964), may have landed on the vessel while it was on maneuvers 50 km west of San Diego the day before and not during the night when the ship was back in port as purported by Banks (1964). It is always possible that any of the owls reported offshore could have covered all or part of the distance on a boat.

In summary, the two sightings reported here of Flammulated Owls on Santa Barbara Island represent: 1) the first records for the California Channel Islands, 2) two additional migrant records for California, and 3) two additional records indicating that this species occasionally wanders over water during its migratory movements.

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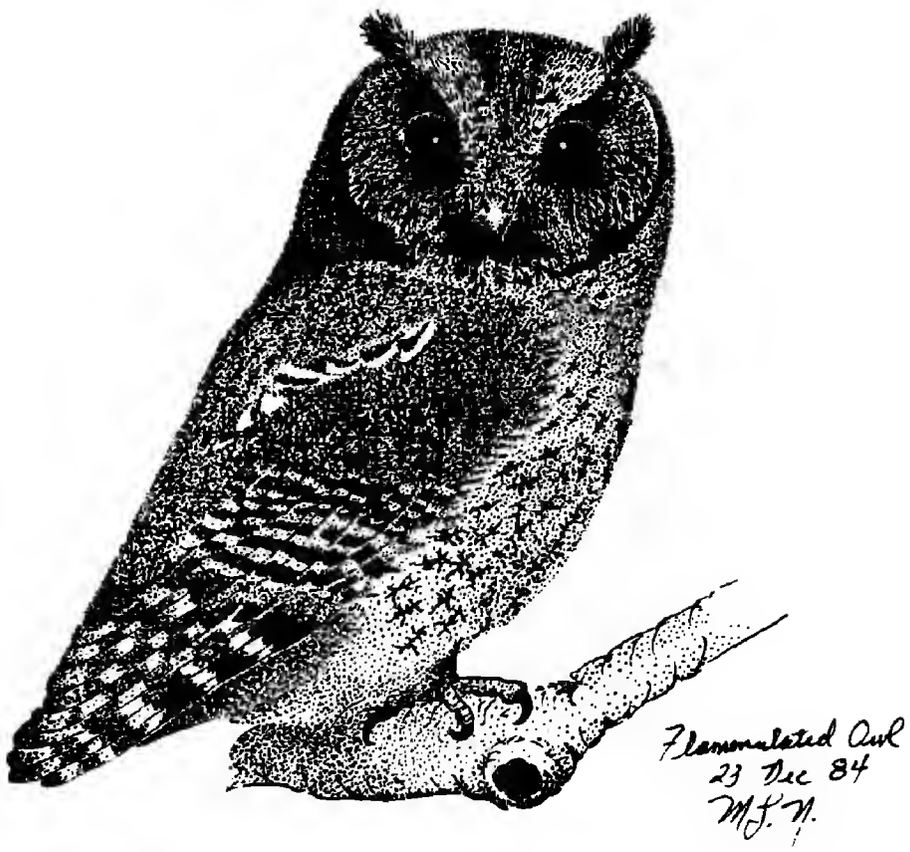

Flammulated Owl *Drawing by Matthew L. Nixon*

American Kestrel *(Falco sparverius)* perched at entrance to nest site in a 12-m high fan palm *(Washingtonia* sp.*)* in Hemet, Riverside Co., California. As of 25 April 1985, when this photo was taken, five kestrel eggs had been laid in a finely woven nest of another species. The nest was situated behind the palm leaves about 0.5 m to the left of this opening and about 3 m above the ground. The kestrels typically left the nest by dropping down behind the leaves about 2 m before flying out of the tree.

Photo by Raymond J. Quigley

NOTES

IDENTIFICATION OF JUVENILE TATTLERS, AND A GRAY-TAILED TATTLER RECORD FROM WASHINGTON

DENNIS R. PAULSON, Burke Museum DB-10, University of Washington, Seattle, Washington 98195

On 13 October 1975, Robert M. and Patricia Evans observed a juvenile tattler at Leadbetter Point, Pacific Co., Washington, that they thought was a Gray-tailed Tattler (*Heteroscelus brevipes*). A description was written, and six photographs of the bird were taken. As juveniles of this species and of the Wandering Tattler (*H. incanus*) were thought to be indistinguishable at that time, the record was tabled.

Now, 10 years after the sighting, it is possible to re-evaluate the record, based on my examination of tattler specimens in the Museum of Vertebrate Zoology, University of California, Berkeley; the National Museum of Natural History, Washington; and the Burke Museum, University of Washington, Seattle. In addition, I have examined numerous photographs, both published and in my own collection, of both species in the field. It is especially fortunate that the photographs of the Leadbetter Point bird are available to examine now (Figure 1).

Parts of the original description are excerpted, as follows: "Plumage: Like a *very* pale Wandering Tattler. Light gray breast, white belly and undertail coverts. A little speckling on wings. No wing-stripe or tail pattern. Back, tail and rump appeared one solid color. (We did *not* notice the rump being lighter.) Light line above eye. Line through eye dark, black from eye to bill. Axillaries gray.

"Bill: Greenish-gray shading to black at tip. Legs: *Bright* yellow (not just yellowish). Voice: Mellow, ringing 3 note call: "too-doo-weet," repeated several times when flushed. Actions: Occasional tail bobbing. Habitat: Sand-mudflat. Comments: Seen with Killdeer and [Red] Knot. *Lighter* than the Knot. Voice *not* the same as the Wandering Tattler which was seen and heard the previous day and listened to on record. Realized the lighter rump is supposed to be a field mark of this species. Bird allowed approach to within about 25' and returned to same place after flushing."

Most field marks with which to distinguish juveniles of the two species are not absolutely diagnostic, but a combination of characteristics of this bird suffice to place a species name on it. The distinguishing characteristics (of *juveniles* only) are as follows, along with characteristics of the Leadbetter Point bird, taken from the description and photographs:

(1) *Gray-tailed is slightly paler than Wandering on back and breast*, with a slightly more brownish cast. Without being able to compare birds directly, this is a difficult characteristic, but the Leadbetter Point bird looks distinctly pale and brownish-tinged in the photographs, which appear correctly exposed. It is fortunate that the bird was compared directly with a Red Knot (*Calidris canutus*), as I was able to similarly compare juvenal- and basic-plumaged specimens of these species (3 Gray-tailed Tattlers, 12 Wandering Tattlers, 4 Red Knots) in the Burke Museum. The Gray-tailed Tattlers are about the same shade as the knots, the Wandering Tattlers distinctly darker. I doubt if a juvenile Wandering Tattler would ever be called paler than a juvenile Red Knot in the field.

(2) *Gray-tailed has the tail slightly paler than the back*, while there is no difference in Wandering. This difference has not been mentioned in the literature, and all field

guides that I have examined illustrate Gray-tailed in flight as if it were uniformly colored above. The contrast is easily seen on specimens, the upper tail coverts and rectrices distinctly paler than the rest of the dorsal surface. When it could be seen, the tail was paler than the back in all photographs of juvenile Gray-tailed that I have examined. The tail does not show in the photos of the Leadbetter Point bird, and the description indicates the bird was uniformly colored above, but the contrast is subtle and may not be as visible in the field as it is in museum specimens. As the observers were looking for a contrasting *rump*, they may not have noted a slightly paler tail as such.

The whitish tips on rump and upper tail coverts in adult Gray-tailed, lacking in Wandering, have been emphasized as diagnostic in literature descriptions (Ridgway 1919, Pough 1957, Gabrielson and Lincoln 1959, King and Dickinson 1975, Prater et al. 1977) and may, along with the sometime common name of Gray-rumped Tattler, have been responsible for thoughts that Gray-tailed should have a paler rump. This characteristic is of little value in the field, not only because the wings normally cover the area, but also because adult Wantering Tattlers also may have a few pale-tipped upper tail coverts. Juveniles of both species have these markings, more abundantly on the average in Gray-tailed (see 5 below).

(3) *Gray-tailed averages more white on the supraocular stripes and forehead* than Wandering. The stripes are usually wider in Gray-tailed and regularly meet on the forehead, while they are usually narrower in Wandering and often are well separated by the dark forehead. This has been mentioned more than once in recent literature (King and Dickinson 1975, National Geographic Society 1983, De Schauensee 1984). I have looked at dozens of specimens and 10 or more photographs of each species, and I find this is only an average difference, with much overlap. The Leadbetter Point bird has conspicuously white supraocular stripes that do not quite meet on the forehead.

(4) *Gray-tailed has white sides;* Wandering has gray. This characteristic has not been mentioned in the literature but was pointed out to me by Urban Olsson, who studied both species in September 1984 in Japan. The difference was illustrated but not mentioned in National Geographic Society (1983) and Robbins et al. (1983). From examination of all the photographs of juvenile tattlers available to me (13 Gray-tailed, 6 Wandering) and a small series of specimens, this characteristic seems to hold up and is probably the best plumage attribute to use to separate juvenal- and basic-plumaged tattlers. The Leadbetter Point bird has white sides.

(5) *Gray-tailed averages more heavily marked above.* The scapulars, wing coverts, tertials, upper tail coverts and rectrices of juvenile Gray-tailed usually exhibit pale tips and/or dots along their edges. Juvenile Wandering vary from almost unmarked to rather extensively marked but averaging less than Gray-tailed. The Leadbetter Point bird is quite extensively marked above, as much so as typical Gray-tailed and certainly more than typical Wandering.

(6) *Nasal groove is shorter in Gray-tailed.* The deep groove on each side of the bill into which the nostril opens is shorter in Gray-tailed, not reaching one-half the bill length; in Wandering it reaches to somewhat over one-half the bill length. This difference is very clear on a considerable number of close-range photographs I have examined. No photograph of the Leadbetter Point bird shows the nasal groove very clearly, but in one of them I have the impression that the groove is short.

(7) *Gray-tailed typically has a two-noted call,* the Wandering a multiple-noted call, very often with 10 notes. The Leadbetter Point bird had a three-noted call, the description of which sounds much like literature descriptions of Gray-tailed calls, with the exception of an additional note in the front (or the first note rolled). Falla et al. (1979) listed the call as either two- or three-noted, their three-noted description essentially like that of the present bird. I have never heard a Wandering Tattler give a two-or three-noted call.

(8) *Gray-tailed shows a wider habitat preference* than Wandering, commonly foraging on mudflats. Although disappointingly sketchy, habitat descriptions of the two species indicate Wandering tends to keep to rocks in most areas in which it occurs, as it clearly does on the Pacific coast of North America. Gray-tailed, on the other hand, commonly forages on mudflats as well as on sand beaches and in rocky areas (Baker 1951, Smythies 1981, Johnsgard 1981). It was the Leadbetter Point bird's presence on a mudflat, very unusual in Washington, that caused the observers to scrutinize it more closely.

Parenthetically, in 18 years of observing shorebirds in Washington, with dozens of tattlers observed every year, I have only twice seen tattlers on mudflats. Both of them were Wandering, as determined by call notes.

DISCUSSION

Of this list of eight characteristics, the Leadbetter Point bird matches Gray-tailed in five and Wandering in one, and two are inconclusive (forehead color and nasal groove length). The back/rump contrast, the only characteristic in favor of Wandering, might have been missed and is not striking in any case. Only two of the characteristics appear to be definitive, the side color and the call note, and in both of these the bird was clearly a Gray-tailed.

Although Gray-tailed Tattlers are seen annually in the western Aleutian Islands, they are considerably rarer anywhere to the east of that area. Roberson (1980) listed about 20 spring and about 40 fall records from Alaska, indicating fall as a time of greater likelihood of occurrence (there has been more field work in spring than fall). The farthest southeast records in Alaska came from Unalaska Island, with three on 24 September 1974 (Roberson 1980), and Middleton Island, with one on 24 September 1982 (Gibson 1983). These occurrences are perfectly timed to produce a bird at Leadbetter Point in early October.

Figure 1. Gray-tailed Tattler (*Heteroscelus brevipes*), Leadbetter Point, Washington, 13 October 1975. The photo shows the distinctive white sides, the pale dorsal coloration and the extensive markings on coverts and tertials typical of this species.
Photo by Robert M. Evans

The only other record south of Alaska was furnished by an alternate-plumaged adult Gray-tailed that was photographed and heard at Lancaster, California, on 23 July 1981 (McCaskie 1981).

ACKNOWLEDGMENTS

I thank Pat and Bob Evans for their notes and photographs. Bob was fairly sure of the identity of this bird ten years ago, and I wish he had lived to see it formally confirmed. I much appreciate the input of Urban Olsson; the note would not have been written had the "new" field mark not been pointed out by him.

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NESTING OF PLUMBEOUS SOLITARY VIREO IN THE SOUTHERN SIERRA NEVADA

LARRY L. NORRIS, Research Office, Sequoia and Kings Canyon National Parks, Three Rivers, California 93271

On 26 June 1983 a nest of the Plumbeous Solitary Vireo (*Vireo solitarius plumbeus*) was discovered at an elevation of 1810 m on Chimney Creek below Chimney Meadow, Kern Plateau, Tulare Co., California. This observation may be the first record of this Rocky Mountain/Great Basin subspecies nesting on the west slope of the Sierra Nevada. Ned K. Johnson collected specimens in breeding condition on 23 May 1973 about 6 km northwest of Chimney Peak at an elevation of 2315 m (Johnson and Garrett 1974); no nest was found. Johnson's specimen records are only 8 km northwest of the location described in this report. The nearest nesting records are to the north in the White Mountains of eastern California, and to the south in the San Bernardino Mountains of southern California, both of which have habitat similar to that found along Chimney Creek in the arid, pinyon-clad southeastern corner of the Kern Plateau. The White and San Bernardino mountains have slopes that descend to the desert edge. The east slope of the southern Sierra also descends to the desert; however, Chimney Creek is on the west slope of the Sierra, and is part of the South Fork Kern River drainage.

Chimney Creek Canyon is a steep-sided gorge cut through large boulders of weathered granite. Pinyon Pine (*Pinus monophylla*), Jeffrey Pine (*P. jeffreyi*), and

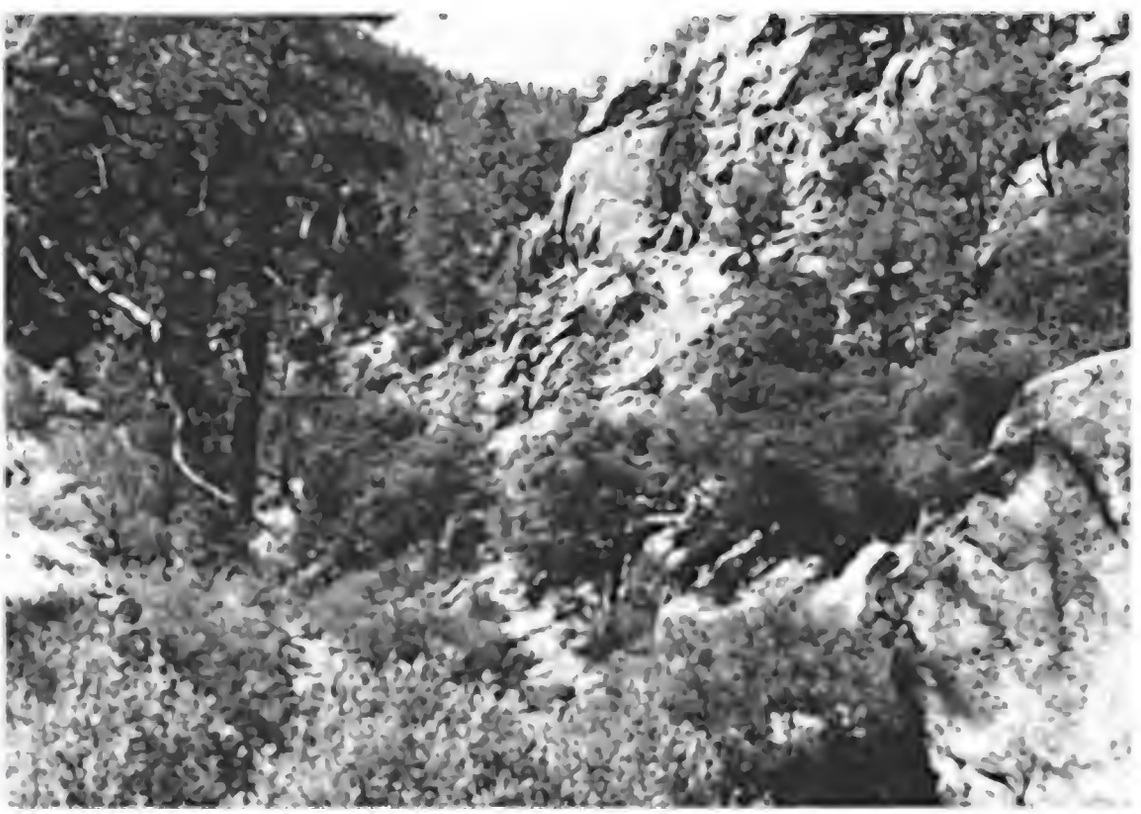

Figure 1. Chimney Creek Gorge, Kern Plateau, Tulare Co., California. Nesting habitat of Plumbeous Solitary Vireo; slopes dominated by Pinyon and Jeffrey pines and Canyon Live Oak. Riparian growth is predominantly willow.

Photo by Larry L. Norris

Canyon Live Oak (*Quercus chrysolepis*) are the dominant trees on the canyonsides, while willows (*Salix* spp.) dominate the riparian areas along the creek (Figure 1). This ecotone of dry canyonside and riparian canyonbottom is recognized as preferred Plumbeous Solitary Vireo habitat (Garrett and Dunn 1981: 302).

On 26 June 1983, Bob Barnes, of Tulare County Audubon Society, was leading a field trip up Chimney Creek Canyon when he heard a Solitary Vireo song coming from the top of a Canyon Live Oak. As the bird slowly descended through the sparse foliage it was recognized to be of the *plumbeus* race by the large white area between eyes and bill, white throat, gray back, and thick base of the bill. To everyone's surprise the bird fluttered down, with insects in its bill, to a nest, and exchanged places with another Plumbeous Solitary Vireo.

The nest was hung toward the end of a lower branch on a Canyon Live Oak about 2 m above the ground. It was constructed of grasses and moss to form a deep bowl with white flower petals attached to the outside. The nest was in no way concealed; nevertheless, it was not easily seen at first because the white petals against the darker moss caused the nest to blend into the mottled light and shade background.

Ian Austin, of the Los Angeles Audubon Society, watched quietly from 1030 to 1200 observing the feeding exchange sequence of the vireo pair, and documenting the nesting with photographs (Figure 2). Both adult vireos were observed feeding small nestlings. Austin recorded six feeding exchanges during the 1.5 hour observation period. These occurred at intervals of 5 to 15 minutes with one adult always on the nest.

Figure 2. Plumbeous Solitary Vireo (*Vireo solitarius plumbeus*) on nest in Canyon Live Oak (*Quercus chrysolepis*). Chimney Creek, Kern Plateau, Tulare Co., California, 26 June 1983.

Photo by Ian Austin

Austin's field notes give a detailed account of the behavior of the adult vireos as they exchanged places on the nest: "The feeding exchange sequence is similar with both adults. It starts with the returning bird calling from the top of the tree and continuing to call as it approaches the nest. The returning bird typically took 2 to 3 minutes to descend from the treetop. The adult on the nest often made a yawning or mock food demanding gesture as the returning bird approached. The sequence was completed by the sitting adult quickly leaving the nest as the returning adult moved in to feed the young and then settle down on the nest replacing the mate. The food consisted mainly of small caterpillars.

"Both birds were heard singing while descending, though one adult, presumably the female, once only made guttural chips. Both birds froze during the feeding exchange when a Steller's Jay (*Cyanocitta stelleri*) called in the distance." The adult vireos seemed to be undisturbed by Austin's long presence at a distance of 2 m.

Later in the day Barnes and I observed another Plumbeous Solitary Vireo in the drainage entering the northwest side of Lamont Meadow about 2 km southwest of the nest observation. This bird probably was not one of the pair observed earlier, although Chimney Creek flows through Lamont Meadow. This observation was of interest because it not only documented another Plumbeous Solitary Vireo in the area, but the vireo had responded to the repeated playing of a tape of the Gray Vireo (*V. vicinior*) song. In fact, the Plumbeous Solitary Vireo's response was nearly identical to the Gray Vireo tape.

Cassin's Solitary Vireo (*V. solitarius cassinii*) is a fairly common nester on the west slope of the Sierra at the lower limits of the mixed coniferous forest where California Black Oak (*Quercus kelloggii*) occurs. On the Kern Plateau *cassinii* has been observed on the forested slopes of the Kern River Canyon at the western edge of the plateau. Barnes and I have never observed *cassinii* in the pinyon forest on the lower, southeastern section of the Kern Plateau.

There appears to be a habitat segregation between the two subspecies: *cassinii* nesting in the cooler, mesic mixed coniferous forests of the western portion of the southern Sierra and *plumbeus* nesting in the warmer, more arid canyons of the pinyon-clad southeastern section of the Kern Plateau. Elevation does not seem to be a critical factor in the two subspecies' choice of nesting habitats since both are found nesting from approximately 1500 to 2000 m in the southern Sierra. The plant community is the deciding factor, but for whatever reason(s) is unknown to me. Because of the similarity of the habitat on the southeastern section of the Kern Plateau to other known nesting areas in the state, many more pairs of Plumbeous Solitary Vireo quite possibly nest along the creeks and canyons of the Kern Plateau in the southern Sierra Nevada.

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FEMALE TREE SWALLOW NESTS SUCCESSFULLY FOLLOWING LOSS OF EYE

ROBERT R. COHEN, Department of Biology, Metropolitan State College, 1006 Eleventh Street, Denver, Colorado 80204

In early July 1983 a pair of Tree Swallows (*Tachycineta bicolor*) began a late nesting in one of my nest boxes about 6.7 km S of Rollinsville, Gilpin County, Colorado. The box contained four newly-laid eggs on 10 July. The female did not have a band, and when I captured her for banding on 16 July I discovered that both her right eye and eyelid had recently been torn open and her crown had been stripped of feathers along a narrow line extending from the right orbital area across to the other side of the head. The wound to the eye was still open and exuding fluid. Examination of her plumage coloration indicated that she was at least 2 years old (Cohen, J. Colo.-Wyo. Acad. Sci. 12:44-45, 1980; Hussell, J. Field Ornithol. 54:313-318, 1983).

On 25 July the box had four nestlings about 4 days old, and both the female and the male were feeding the nestlings very actively. When I approached the box the female dived repeatedly at me to defend the nest, passing close enough that I could clearly see without binoculars that she lacked a functional right eye. On 3 August, in visiting the box to band the nestlings, I recaptured the female as she brought food to the nestlings and found that her right orbital area had dried, sunk in, and healed over with skin. On 6 August, when the nestlings were about 18 days old and about 3 days from fledging, I again saw both parents feeding the nestlings. When I next visited the box in October to clean it, examination of the nest condition indicated that the nestlings had fledged successfully.

The perseverance of this female in nesting following severe injury and her ability to forage successfully and raise a brood with only monocular vision and reduced depth perception are remarkable. The following year (1984) I captured almost all adult Tree Swallows breeding in my nest boxes, but this female did not reappear nor did any of the nestlings. However, in this breeding population the proportion of successfully-breeding females that return to breed the following year is only about 50% and the proportion of fledglings that return to breed the following year is only about 10% (Cohen, unpubl. data).

I thank Diana Tomback, Cameron Barrows and an anonymous reviewer for comments on the manuscript.

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FIRST RECORD OF A RUBY-THROATED HUMMINGBIRD IN CALIFORNIA

RONALD E. COLE, Museum of Wildlife & Fisheries Biology, University of California, Davis, California 95616
ANDREW ENGILIS, JR. Museum of Wildlife & Fisheries Biology, University of California, Davis, California 95616 (present address: The Bishop Museum, Honolulu, Hawaii 96819)

On 15 May 1975 Ron Cole collected an adult male Ruby-throated Hummingbird (*Archilochus colubris*) at Sagehen Creek Field Station, 11 km north of Truckee, Nevada County, California (39° 25'N, 120° 15'W). The bird was freeze-dried as a study specimen (WFB-972, Museum of Wildlife & Fisheries Biology, University of California, Davis). Because Ruby-throated Hummingbirds are not included in recent comprehensive publications on the occurrence of California birds (McCaskie et al. 1979, Garrett and Dunn 1981, Jones et al. 1981), or reported in the most recent reports of the California Bird Records Committee (Luther et al. 1983; Binford 1983, 1985), we conclude that this specimen represents the first record for the species in California.

This specimen was incidentally captured in a net set up to capture bats. It was captured about 20 m from Sagehen Creek in an opening between two groups of willows (*Salix*) in a grassy meadow. It flew into the net simultaneously with an adult male Calliope Hummingbird (*Stellula calliope;* WFB-973). It was recorded in the field as a Ruby-throated Hummingbird, but its identity was mistakenly changed by a technician to a Broad-tailed Hummingbird (*Selasphorus platycercus*) when it was accessioned into the museum collection. It remained misidentified until December 1983, when we discovered the error.

This specimen has been examined and verified as a Ruby-throated Hummingbird by the authors and by Bruce Maxwell, Jon Dunn and Kimball Garrett. It was photographed, examined and compared to eight other adult male *A. colubris* by Garrett at the Los Angeles County Museum of Natural History. Measurements and descriptions are as follows (K. Garrett pers. comm.): culmen (chord of exposed culmen) = 14.7 mm; wing = 41 mm; tail = 24 mm; depth of tail notch (difference between longest outer and shortest central rectrix) = 5 mm. The chin (extending down about 3 mm from the base of the mandible) is velvety black, with absolutely no iridescence evident at any angle; this black area extends back through and below the eye and flares out somewhat on the auriculars. [We add that the color of the throat is red-orange, iridescent, and extends down from the chin approximately 10 mm.] The rectrices completely lack rufous tones, even on the outermost pair. The color of the upperparts is a deep forest green, exactly the color shown by *A. colubris* skins and quite different from the color of *S. platycercus*. The rectrices are blackish, rather narrow, and form a distinct notch.

Our thanks to Bruce Maxwell, Jon Dunn and Kimball Garrett for examining and verifying the species as *A. colubris*, and to Daniel W. Anderson for reviewing a draft of this note.

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Ruby-throated Hummingbird *Sketch by Narca Moore-Craig*

ANOTHER HYBRID DOWNY x NUTTALL'S WOODPECKER FROM SAN DIEGO COUNTY

PHILIP UNITT, 3411 Felton Street, San Diego, California 92104

Short (1971) reported three hybrid Downy [*Picoides (= Dendrocopos) pubescens*] x Nuttall's (*P. nuttallii*) Woodpeckers, one collected at "San Francisco," California, in the 19th century and two along the San Diego River near Lakeside and Santee, San Diego County, California, in September and October 1949. He suggested that the two species are close relatives that hybridize where they are sympatric but one species' population is sparse enough that individuals have difficulty finding conspecific mates. Such conditions prevail in the riparian woodlands of coastal San Diego County, where the Nuttall's Woodpecker is common and widespread, but the Downy Woodpecker is uncommon and localized (Short 1971, Unitt 1984).

On 7 May 1984, along the San Luis Rey River 3.7 km (2.3 miles) northeast of Bonsall, San Diego County, I heard a peculiar woodpecker call, a chatter on a single pitch that seemed intermediate between the ascending rattle of the Nuttall's and the descending whinny of the Downy. I located the bird visually and saw that at a distance the bird looked much like a Nuttall's Woodpecker, but that the black and white bars on its back seemed slightly irregular. Suspecting the possibility of a hybrid, I collected the bird and prepared it as a study skin. I had observed both parental species at this locality previously: two *pubescens* on 28 February 1984 and one on 16 July 1978; two *nuttallii* on 16 July 1978. The specimen was a male in breeding condition with the testes greatly enlarged (5.5 x 11 mm each). It weighed 33.5 grams and was moderately fat. As to be expected at this time of year, it was in badly worn plumage and was not molting. The specimen, my original number 366, is now number 43956 in the San Diego Natural History Museum.

Most differences in plumage and structure between Nuttall's and Downy woodpeckers were tabulated by Short (1971). The most conspicuous difference is the back pattern: regular black and white transverse bars in Nuttall's, black with a single longitudinal broad white stripe in the Downy. Male Nuttall's Woodpeckers have fine white streaks on their black crowns, though the extent of this streaking is quite variable, from profuse to slight. Male Downy Woodpeckers have solidly black crowns. The red nuchal band is broader in Nuttall's (about 13 to 15 mm, measured longitudinally and mid-dorsally) than in the Downy (about 6.5 to 9.5 mm). In Nuttall's Woodpecker a black bar on the side of the head joins the black auricular patch to the black malar stripe; this bar is absent in Downy. The background color of the underparts is essentially white in Nuttall's but is strongly tinted smoke gray in the coastal California subspecies of Downy (*P.p. turati*). The sides of Nuttall's Woodpeckers are heavily spotted with black, and these spots become bars on the flanks. The underparts of adult Downies are unmarked except for one or two small black spots on the sides of the breasts of a few individuals. *Picoides nuttallii* is larger than *P.p. turati*, with males' wing chords 99.7—107 mm and exposed culmens 19.5—22 mm, as opposed to 88.5—97 mm and 15—17 mm, respectively (Ridgway 1914, Short 1971).

The specimen collected on 7 May 1984 is intermediate between Nuttall's and Downy woodpeckers, being closer to the first species in some characters, to the second in others. It is closer to Nuttall's Woodpecker in back pattern, though the barring is coarser than in that species, is somewhat irregular in the center of the back, and does not extend to the anterior scapulars. The head pattern is much like that of Downy: the crown is plain black, and the red nuchal band is 9.5 mm wide, equal to the widest in any *P.p. turati* I measured. The black malar stripe barely touches the black auricular patch. The underparts are the most difficult to evaluate since the feathers are so badly worn and likely faded. The background color seems almost pure white, but there are

only two small black dots on the sides of the upper breast, and the lower flanks are only faintly barred gray. Thus the underparts combine features of both species. The specimen's wing chord measures 97.2 mm and its exposed culmen, 19.0 mm; so the bird is intermediate in both structures. Therefore I conclude that it is a hybrid. Short regarded the previous hybrids as F_1 individuals, and came to no conclusion regarding the possibility of hybrids backcrossing with the parental species. My specimen's being so clearly in breeding condition suggests that such backcrossing may occur. The new specimen may not necessarily have been of the F_1 generation itself.

In the field the bird gave the gross impression of being a Nuttall's Woodpecker. I may not have suspected its hybrid nature had I not heard its odd call. Hybrids between Downy and Nuttall's woodpeckers, though probably rare, may often go unnoticed. Since the genes producing the barred back apparently are dominant over those producing the white back (Short 1971), observers should not rely exclusively on back pattern to distinguish Downy from Nuttall's Woodpeckers or their hybrids.

I thank Joseph M. Angeli for his hospitality during my visit to northwestern San Diego County, Ned K. Johnson for a loan of specimens of Downy Woodpecker from the Museum of Vertebrate Zoology, Berkeley, and Lester L. Short, Kenneth C. Parkes and Amadeo M. Rea for their review of this note.

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NOTES ON THE FEEDING BEHAVIOR OF BULLER'S SHEARWATER

TERENCE R. WAHL, Department of Biology, Western Washington University, Bellingham, Washington 98225

Buller's Shearwater (*Puffinus bulleri*) breeds only on Poor Knights Island in northern New Zealand (Jenkins 1974) and migrates north across the tropics to spend its nonbreeding season (the boreal summer) in the subarctic Pacific Ocean (Wahl 1985). It is one of the least-known Pacific shearwaters, perhaps because of its restricted breeding range and small population size. Recently it has been increasing in numbers after the elimination of predators on the nesting island (Bartle 1968, Jenkins 1974) and is now seen regularly over much of the North Pacific.

Jenkins (1974) described the feeding behavior of this species as similar to that of surface-feeding ducks: while swimming forward it swings its head from side to side just under the surface of the water. Harper (1983) described two additional feeding techniques, one of which was contact dipping, "precisely that described" by King (1974) for the Wedge-tailed Shearwater, *P. pacificus:* "In contact dipping birds flew close to the surface, wings held back as if to hover, sometimes touching the surface with outstretched feet. Head and neck were plunged down several inches into the water. Forward momentum was regained by vigorous wingbeats and foot paddling. Usually when a fish was caught it was eating without interrupting flight although birds stopped on the surface occasionally, presumably to swallow heavy prey." Harper also states *bulleri* takes prey by surface feeding: "In light airs birds abruptly descend to alight on the water and, with their wings half open, lunge this way and that with their long necks to capture prey." Roberts (1951) reported seeing several birds dive for bait down to about 20 feet, but stated that he had not previously observed this behavior. Harper (1983) reported seeing Buller's Shearwaters plunge briefly below the surface on only 2 of 211 observations of feeding behavior. Bartle (1974) reported that Buller's Shearwaters do not usually follow ships or forage on discards but cited one occasion of "exceptional behavior" when birds fed on fish offal. Wahl and Heinemann (1979) found that, off Washington, this species is not attracted to discards of fishing vessels, whereas Pink-footed (*P. creatopus*), Flesh-footed (*P. carneipes*) and Sooty (*P. griseus*) shearwaters were readily attracted and can be "chummed" to boats. Short-tailed Shearwaters (*P. tenuirostris*) are also attracted to fishing vessels on occasion and can be chummed to boats (pers obs.).

During several extended mid-ocean cruises and over 140 1-day trips off the coast of Washington I saw numbers of Buller's Shearwaters in large and small groups and as single birds. Most groups were resting on the surface. I seldom saw this species trying to obtain food. The feeding behavior I observed was similar to that described by Harper. However, in some cases the foraging flight style was remarkable in being extremely active and erratic to a degree not suggested by previous reports. The following notes may expand the knowledge of this species' behavior:

19 Sep 1976 at 47°07'N, 124°40'W, about 40 km off Copalis Beach, Washington: one bird dove from about 15 cm above the surface, head first with wings partially extended, barely submerged and resurfaced almost immediately without having caught anything obvious.

25 Sep 1976 at about 47°07'N, 125°00'W, about 70 km off Copalis Beach, Washington: one "crashed" on its breast, with wings outspread, in a shallow dive to the surface, plunged its head about 15 cm below the surface and caught something unidentified.

7 Aug 1981 at 47°57'N, 165°17'W, in mid-ocean: one flying bird landed heavily on its breast with wings outspread.

11 Aug 1981 at 44°01'N, 174°13'E: one flew in tight circles, "flopped" to the surface several times, lightly skimming the surface with its breast and belly, with its head out of the water.
11 Aug 1981 at 44°02'N, 174°46'E: one circled erratically in tight loops and bounced off the water several times.
8 Sep 1985 at 46°52'N, 124°46'W, about 46 km off Westport, Washington: one bird flew in loops and circles, crashing to the surface on its breast, often submerging its head, and quickly taking off again to repeat the operation. I saw the bird persist in this behavior for about 5 minutes. Its course was very erratic, but trended away from the vessel which attempted to close in on it at about 5 kts. I did not get closer than 75 m and could not see if this foraging was successful.

This aerial technique resembles a combination of both methods described by Harper (1983). However, in none of these instances did the bird extend its feet to contact the water before bouncing or "flopping" onto the surface. This technique suggests pursuit of fast-moving near-surface prey such as small fish and might possibly be suitable for catching flying fish, although these observations were outside the range of flying fish. This foraging/feeding technique might be described as "heavy contact surface dipping." The erratic, bouncing chase behavior I observed appeared more active and persistent than previous descriptions. As noted above, I saw just one Buller's Shearwater submerge, and only very briefly, following a "crash" to the surface.

These observations fit the spectrum of feeding behaviors described by Brown et al. (1978) for various species of *Puffinus* and *Calonectris*. These shearwaters range from gliding surface feeders that do not submerge, such as *P. leucomelas*, to agile divers and underwater swimmers like *P. griseus* and some smaller *Puffinus* species. My observations and the literature indicate that in flight Buller's Shearwater is one of the most agile of this group. It is able to turn sharply in light winds and soar easily. It is also one of the least likely to submerge and pursue prey underwater, the diving behavior described by Roberts (1951) being exceptional. Harper (1983) states that Buller's Shearwater weighs about one-half as much as the similarly-sized pursuit-plunging Sooty Shearwater, which indicates anatomical characteristics more suitable for flight than diving behavior.

That Buller's Shearwater has not taken to scavenging discards from fishing operations perhaps is a result of competition with aggressive surface-feeding species like gulls and diving shearwaters (e.g. *P. griseus*).

The frequency with which I have seen the species resting on the surface while other shearwaters were feeding nearby and the few observations of feeding behavior during daylight hours suggest that Buller's Shearwater may be a relatively more nocturnal feeder than other shearwater species. Serventy et al. (1971) list cephalopods, crustacea and small fish as the diet of Buller's Shearwater. Such prey would be most readily available to an aerially adapted, non-diving species during the nocturnal plankton rise. Jenkin's (1974) observations of flocks of *bulleri* feeding in tidal fronts or convergences off northern New Zealand during the nesting season show that the species certainly takes advantage of local prey concentrations during daylight hours, at least in that season.

My observations were made possible by the Department of Oceanography, University of Washington, and the Faculty of Fisheries, Hokkaido University. Special thanks are due Capt. J. Watkins, Capt. W. Clampitt of the *R.V. Thomas G. Thompson*, Dr. H. Ogi and Capt. T. Fujii of the *T.V. Oshoro Maru*. Laurence C. Binford helpfully reviewed an early version of this note.

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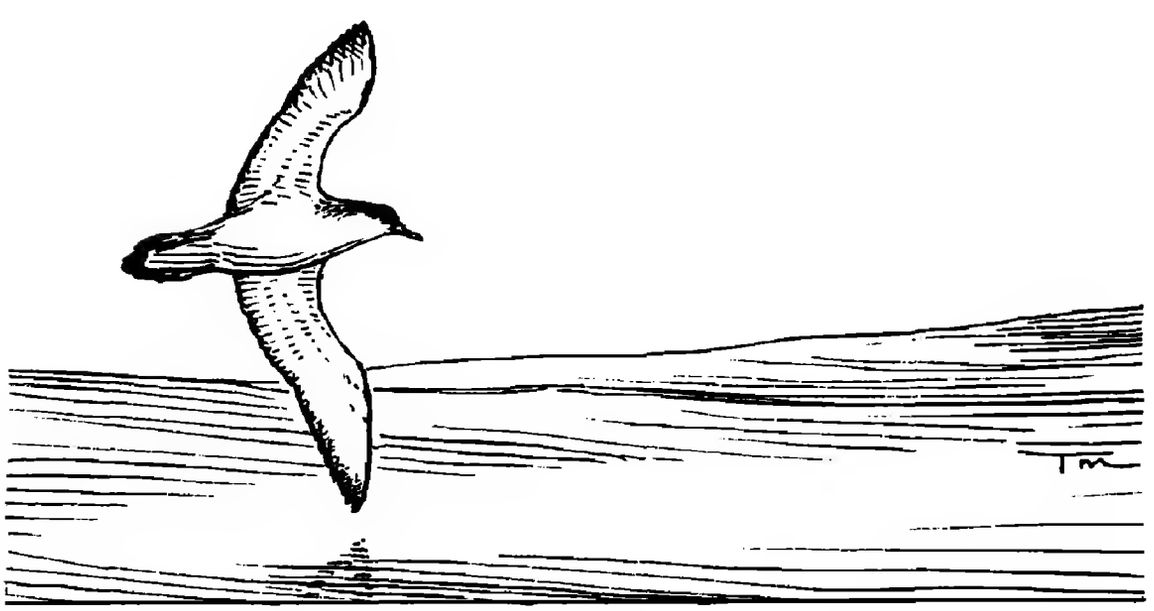

Buller's Shearwater *Sketch by Tim Manolis*

NESTING OF THE PHAINOPEPLA ON SANTA CRUZ ISLAND, CALIFORNIA

PAUL D. HAEMIG, Lewis and Clark's Rangers, P.O. Box 4561, Brownsville, Texas 78523-4561

The Phainopepla (*Phainopepla nitens*) is reported to breed on only one island off the coast of southern California: Santa Catalina (Diamond and Jones 1980). Recently, however, I discovered Phainopeplas nesting on Santa Cruz Island, over 100 km away. My discovery shows that the insular breeding distribution of this erratic species is more extensive than previously thought.

On 10 June 1984, I found a pair of Phainopeplas nesting in the Central Valley of Santa Cruz Island. Their nest was located between the Nature Conservancy facility and Cascada Canyon, 1.8 km west (by road) of the University of California Field Station. The nest was situated in an oak tree (*Quercus* sp.) that overlooked a dry wash, in a small oak woodland at the base of a north-facing mountain slope. The nest was placed in dense foliage near the distal end of a long branch, approximately 4 m above the ground.

During my visits to the nest from 10 to 18 June, the adult Phainopeplas were incubating eggs. During my visits to the nest from 29 June to 9 July, they were feeding nestlings. On 9 July, when I left the island, the young appeared to be almost ready to leave the nest.

I did not collect the nest and its contents because the population of breeding Phainopeplas on Santa Cruz Island appeared to be small. However, I did show the active nest to both Lyndal Laughrin and Tony Calig, and they can vouch for the validity of this record.

My research on Santa Cruz Island was made possible through the kindness of Carey Stanton, Lyndal Laughrin, Shirley Clarke, the Santa Cruz Island Company, the Marine Science Institute of the University of California-Santa Barbara, and the U.S. Navy.

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Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

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Good photographs of rare and unusual birds, unaccompanied by an article but with caption including species, date, locality and other pertinent information, are wanted for publication in *Western Birds*. Submit photos and captions to Photo Editor.

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WESTERN BIRDS

Volume 17, Number 2, 1986

NINTH REPORT OF THE CALIFORNIA BIRD RECORDS COMMITTEE

DON ROBERSON, 282 Grove Acre Ave., Pacific Grove, California 93950

The editorial staff of Western Birds is pleased to announce that ***Bushnell Corporation*** *has underwritten the full costs for printing this report of the California Bird Records Committee. We know that members of Western Field Ornithologists will appreciate this special support from Bushnell. Bringing color photos into the journal is costly, but greatly enhances the report. CBRC reports are among the most popularly (and meticulously) read articles appearing in Western Birds. All along the way, Bushnell has been enthusiastic in its desire to make it a quality report, from way back when Jon Dunn first asked the people at Bushnell to consider sponsoring the Records Committee report, through the time we asked them to send camera-ready copy for the advertisement of Bushnell products in this issue of Western Birds.*

To everyone at Bushnell Corporation, a warm thank you. We hope this support of the California Bird Records Committee will be a regular sighting in Western Birds.—Bruce Webb

This report contains 212 accepted records of 73 species and 27 unaccepted records of 24 species (including 2 previously accepted). These numbers represent an acceptance rate of 88.7%, very similar to the acceptance rate of 88.4% in our Eighth Report (Morlan 1985). One hundred forty-two observers contributed descriptions or photographs, the most for any annual report.

At its annual meeting in February 1984, the California Bird Records Committee ("CBRC" or "the Committee" hereafter) decided to fulfill its primary purposes of evaluating, publishing and storing records of California rarities by reviewing all reports, including those which are quite old. At that time we had reviewed only about 49% of published reports of species on the CBRC review list. We have obtained unpublished notes, reviewed published accounts, and considered extant specimens. Specimens were judged on the basis of photographs of the skins or skeletons and published or unpublished details. Since specimens have been misidentified in the past (for example, see Roberson and Pitelka 1983), review of specimens is as important as review of sight records.

Many old records were obtained from the unpublished field notes of Jon L. Dunn, Kimball L. Garrett, Guy McCaskie, Don Roberson, and the late Laidlaw Williams and from published details in *The Auk* and *The Condor*. Many other old reports are still under review. Published herein are several records which have long been considered acceptable by other authors. This publication simply marks their formal CBRC acceptance under a specific record number. We are pleased to report that we have now evaluated about 65% of all known review-listed species. We welcome documentation of all unreviewed past records.

State boundaries. At its February 1985 annual meeting, the CBRC extended its offshore coverage and will now review all rarities observed or collected in California waters within 200 miles of the mainland.

State list. This report officially adds 10 species to the California state list: Cook's Petrel, Anhinga, Whooper Swan, Common Black-Hawk, Little Curlew, Little Stint, Ruby-throated Hummingbird, White Wagtail, Rustic Bunting and Brambling. These additions bring the California list to 560 species. A new official state list has been prepared (Binford 1986).

Review list. The list of species or forms we review has remained relatively stable over recent years. In general, this list includes species that average four or fewer records per year. We welcome reports of the following:

Yellow-billed Loon; Least Grebe; Wandering and Short-tailed Albatross; Mottled, Cook's and Stejneger's Petrel; Streaked and Greater Shearwater; Wilson's, Band-rumped and Wedge-rumped Storm-Petrel; White-tailed and Red-tailed Tropicbird; Masked, Brown and Red-footed Booby; Olivaceous Cormorant; Anhinga; Reddish Egret; Yellow-crowned Night-Heron; White Ibis; Black-bellied Whistling-Duck; Whooper and Trumpeter Swan; Emperor Goose; Baikal Teal; Garganey; Tufted Duck; King and Steller's Eider; Smew; Mississippi Kite; Common Black-Hawk; Harris' and Zone-tailed Hawk; Gyrfalcon; Sharp-tailed Grouse; Yellow Rail; Purple Gallinule; Mongolian, Wilson's and Piping Plover; Eurasian Dotterel; American Oystercatcher; Spotted Redshank; Gray-tailed Tattler; Upland Sandpiper; Little Curlew; Hudsonian and Bar-tailed Godwit; Rufous-necked and Little Stint; White-rumped, Curlew and Buff-breasted Sandpiper; Jack Snipe; Little, Common Black-headed and Lesser Black-backed Gull; Sandwich and Sooty Tern; Thick-billed Murre; Kittilitz's Murrelet; Parakeet, Least and Crested Auklet; Black-billed Cuckoo; Groove-billed Ani; Snowy and Barred Owl; White-collared Swift; Broad-billed, Violet-crowned, Blue-throated and Ruby-throated Hummingbird; Red-headed Woodpecker; Greater Pewee; Eastern Wood-Pewee; Yellow-bellied, Dusky-capped, Great Crested, Sulphur-bellied and Scissor-tailed Flycatcher; Thick-billed Kingbird; Eurasian Skylark; Blue Jay; Sedge Wren; Dusky Warbler; Northern Wheatear; Veery, Gray-cheeked and Wood Thrush; Rufous-backed Robin; Gray Catbird; Curve-billed

Thrasher; Yellow, White, White/Black-backed and Black-backed Wagtail; Red-throated and Sprague's Pipit; White-eyed, Yellow-throated, Philadelphia and Red-eyed (Yellow-green) Vireo; Blue-winged, Golden-winged, Blue-winged X Golden-winged, Golden-cheeked, Yellow-throated, Grace's, Pine, Cerulean, Prothonotary and Worm-eating Warbler; Louisiana Waterthrush; Kentucky, Connecticut, Mourning and Red-faced Warbler; Scarlet Tanager; Northern Cardinal; Pyrrhuloxia; Varied and Painted Bunting; Cassin's, Field, Baird's, LeConte's and Sharp-tailed Sparrow; Rustic and Snow Bunting; Common Grackle; Streak-backed Oriole; Brambling; White-winged Crossbill; Common Redpoll.

The CBRC also reviews records of any species not yet on the state list.

Committee membership. After serving six years as Secretary, Benjamin D. Parmeter retired in January 1986. I am the new Secretary and all documentation of records should be sent to me at the above address. The current members are: Stephen F. Bailey, Louis Bevier, Jon L. Dunn, Richard A. Erickson, Kimball L. Garrett, Jeri M. Langham, Curtis Marantz, Joseph Morlan and Richard Stallcup.

Format. The format is similar to that of the Eighth Report (Morlan 1985), with a few modifications discussed below. Each record includes the locality and a standard abbreviation for the county (see below), followed by the date and (in parentheses) the initials of reporting contributors and the CBRC record number. If the observer(s) who first found or identified the bird provided documentation, his or her initials are given first, followed by a semicolon. If an observer submitted a photograph, a dagger (†) follows their initials. Many photographers submitted written descriptions with their photos, a practice we encourage. A specimen is indicated by "#," followed by an abbreviation (see below) for the museum which houses the specimen and the specimen number. Unless otherwise indicated by "#" or "†," all reports are sight records.

I have provided a full span of dates for each record. This information was provided by committee members or was gleaned from the seasonal reports published in *American Birds*. If our dates differ from *American Birds* published dates, our dates have been italicized, indicating they are correct. I have cited published photographs. Species marked with an asterisk (*) are no longer reviewed by the Committee.

A new feature in this report is an annotation following each species name that indicates the number of CBRC accepted records. If a double asterisk (**) follows this number, refer to the following list of explanations.

Short-tailed Albatross: This species was regular offshore California before the 20th century. Only accepted records since 1900 are included in the total. We do not review reports prior to 1900.

Cook's Petrel: Total includes those records accepted with the disclaimer discussed in the text.

Emperor Goose: Total includes 22 records cited by Grinnell & Miller (1944) which, due to the lack of available documentation, appear unlikely to be reviewed. They are included in the statistical count of accepted records, but are not formally accepted.

Harris' Hawk: This species was a permanent resident in the Imperial Valley into the 1950s and along the Colorado River until the early 1960s. Though some old records have been reviewed, the CBRC no longer reviews records prior to 1960 and only those accepted records since then are included in the total.

Parakeet Auklet: Eight specimens (5 from San Francisco, 3 from Monterey Bay) listed by Grinnell & Miller (1944) are apparently no longer extant and are unlikely to be reviewed due to lack of available documentation. They are included in the statistical count, but are not formally accepted.

Snowy Owl: Grinnell & Miller (1944) summarized several flights in the period 1895-1897, plus birds in 1908 and 1916. The flight in Nov-Dec 1916 apparently numbered at least 20 birds, but only one specimen now seems extant. The statistical total includes 21 records since 1900 listed by Grinnell & Miller (1944), though only one has been formally accepted. The other early records seem unlikely to be reviewed due to the lack of available documentation.

White/Black-backed Wagtail: The total includes records accepted as a specific species.

Some records reported here are of individual birds returning for additional years. Each such report is reviewed annually under a separate CBRC number. Members are asked if they believe the bird is the same individual as previously accepted. If the consensus is that it is the same, it is treated as additional dates of a previous record and does not appear in the statistical count; otherwise it is considered a new record. Some of these decisions made at the annual meeting in February 1985 are included here.

All annotations, except those noted above, are mine, although the information usually comes from Committee files. The CBRC does not formally review age and sex and all indications herein are opinions, not officially accepted CBRC positions.

Abbreviations. Seasonal reports in *American Birds* are abbreviated *AB*, followed by volume and page number. County abbreviations follow Morlan (1985): ALA Alameda, BUT Butte, CC Contra Costa, DN Del Norte, HMB Humboldt, IMP Imperial, INY Inyo, KRN Kern, LAS Lassen, LA Los Angeles, MRN Marin, MRP Mariposa, MER Merced, MOD Modoc, MNO Mono, MNT Monterey, NEV Nevada, ORA Orange, PLU Plumas, RIV Riverside, SBE San Bernardino, SD San Diego, SBA Santa Barbara, SJ San Joaquin, SLO San Luis Obispo, SM San Mateo, SCL Santa Clara, SCZ Santa Cruz, SIS Siskiyou, SOL Solano, SON Sonoma, TRN Trinity, TUL Tulare, VEN Ventura. Museums that house specimens reported herein are abbreviated:

CAS = California Academy of Sciences, San Francisco
LACM = Los Angeles County Museum of Natural History
MVZ = Museum of Vertebrate Zoology, University of California, Berkeley
PGMNH = Pacific Grove Museum of Natural History
SDNHM = San Diego Natural History Museum
SBCM = San Bernardino County Museum
SBMNH = Santa Barbara Museum of Natural History

Other standard abbreviations throughout include: NM = National Monument, NS = National Seashore, NWR = National Wildlife Refuge, SE Farallon I. = Southeast Farallon Island, Pt. = Point. Directions of the compass are sometimes abbreviated.

Contributors: Listed by their abbreviations in the text: David Abbott, Dennis Abbott (DA), Stephen F. Bailey, Alan Baldridge, Bruce Barrett (BBa), Don Bazzi, Rebecca Belkin, Chris Benesh, Linda A. Belluomini, Laurence C. Binford, Ronald L. Branson, N. Bruce Broadbooks, Henry Brodkin, June Buntin, Betty Burridge (BBu), John Butler, Kurt F. Campbell, Eugene A. Cardiff, Steven W. Cardiff, Barbara A. Carlson, Karen Cartier, Herbert Clarke, Ron Cole, Wanda D. Conway, Elizabeth Copper, Malcolm Coulter, Alan M. Craig, Brian E. Daniels, David DeSante (DDeS), Donna Dittmann (DD), Linda Doerflinger, Jon L. Dunn, Tom M. Edell, David G. Edwards, Richard A. Erickson, Jules Evens, Gary M. Fellers, Joan Fellers, Jeffrey W. Fleischer, Ronnie Fowler, Kimball L. Garrett, Doug George, Albert Ghiorso, Ed Greaves, Jeffrey A. Greenhouse, William E. Grenfell, Jr., Kem L. Hainebach, Robert C. Halsy, Rob Hansen, W. Ed Harper, Syd P. Harrison, Debra L. Hays, Loren R. Hays, Phil Henderson, Lillian K. Henningsen, Wes Hetrick, Don Hoechlin, Dorothy Hoffman, Robert Hogan, Alan Hopkins, Arthur L. Howe, N.G. Howell, Richard Ives, Kenn Kaufman, Brian W. Keelan, Dave Krueper, Woody Kuehn, Jeri M. Langham, Kim Lathrop, Stephen A. Laymon, Paul E. Lehman, Phil Lenna, Gary S. Lester, Ron LeValley, George Lindsay, Mike Lippsmeyer, John S. Luther, Tim Manolis (TM), Curtis Marantz, Roger Malrowe, Guy McCaskie, Teya McElroy (TMc), Nancy McMahon, Patrick McMonagle, Alan B. Meyerfield, Larry A. Moore, Joseph Morlan, Doug Morton, Dan Murphy (DM), Janet B. Murphy, Dan Nelson, Eugene O'Reilly, Benjamin D. Parmeter, John Parmeter, Red & Jacqueline Phillips, Robert L. Pitman, Point Reyes Bird Observatory, Dave Povey, Sylvia J. Ranney, Don Roberson, Henry Robert, Steve & Diane Rose, Mary Louise Rosegay, Larry Sansone (LSa), Barry Sauppe, Scott Seltman, Dennis & Rebecca Serdehely, Arnold Small (AS), Gregory P. Smith, Sue Smith (SSm), Larry Spear (LSp), Richard Stallcup, Andrew Starrett (ASt), Don Sterba, Gary J. Strachan, Jim & Ellen Strauss, G. Shumway Suffel, Steve Summers (SSu), Harold Swanton, Chris Swarth, Ian C. Tait, Dan Taylor, Chris Tenney, Bob Tintle, W. Breck Tyler, William Van Meter, Kent Van Vuren, Vitaly Volmenski, Richard E. Webster, Brian Weed, Michael Weinstein, Nick Whelan, Jack Wilburn (JWb), Laidlaw Williams, Douglas R. Willick, Jon Winter (JWn), Frank Wright, David G. Yee, Bob & Carol Yutzy.

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Former members who voted on some or all of the records in this report were: H. Lee Jones, Paul E. Lehman and Richard E. Webster. The following curators or collection managers graciously provided members access to their collections: Luis F. Baptista and Stephen F. Bailey (CAS), Eugene A. Cardiff (SBCM), Kimball L. Garrett and Ralph W. Schreiber (LACM), Stanley W. Harris (Humboldt State University), Ned K. Johnson and Anne Jacobberger (MVZ), James R. Northern (Univ. of Calif., Los Angeles), Dennis M. Power (SBMNH), Amadeo M. Rea (SDNHM) and Vernal L. Yadon (PGMNH). Lloyd Kiff continues to curate past CBRC records at the Western Foundation of Vertebrate Zoology, 1100 Glendon Avenue, Los Angeles, CA 90024. The following photographers particularly deserve credit for aiding the work of the Committee: Albert Ghiorso, Ed Greaves, W. Ed Harper, Alan Hopkins and Richard E. Webster.

ACCEPTED RECORDS

YELLOW-BILLED LOON *Gavia adamsii* (23). One in breeding plumage flying north past Pigeon Pt. SM 9 May 1979 (BS; 97-1983). One inside San Francisco Bay at San Francisco SF 7-14 Feb 1982 (RH; WK, DM; 45-1982). An immature on Lake Perris, near Lakeview RIV 20 Dec 1983-4 May 1984 (DD, SWC; JLD, JML, GMcC, REW†; Figure 1; 134-1983). A previously accepted record from Monterey harbor MNT (7-1972; Winter 1973) is amended to reflect the entire date span 26 Jan-4 May 1972.

The Pigeon Point bird is the second record of a breeding-plumaged bird in California. The first was also a spring migrant flying north past a coastal viewing site (Morlan 1985). The Lake Perris bird is the first accepted inland record for the state. The San Francisco bird illustrated the need for all observers to submit details; the report was accepted on the third round only after a committee member obtained details from additional observers.

SHORT-TAILED ALBATROSS *Diomedea albatrus* (2 **). A first-year bird first observed at 35°30'N, 122°11'W (off SLO) followed the ship for 45 minutes to a point about 40 miles southwest of Cape San Martin MNT *2* Dec 1983 (RLP†, LSp; 72-1984); a photo was published by Roberson (1985).

This species, considered common in California waters in the 19th century, was nearly extirpated and has only recently begun to recover. Recent population estimates are around 250 birds (Haseagawa & DeGange 1982). This is only the second accepted record this century; see Unaccepted Records for a retraction of another report.

*LAYSAN ALBATROSS *Diomedea immutabilis* (14 *). One on Monterey Bay MNT 13 Feb 1977 (JML†, DR; 91-1983). One about 30 miles west of Pt. Año Nuevo SM 8 Nov 1982 (SSm; 96-1983). One about 15 miles west of Pt. Pinos MNT 5 Feb 1983 (JLD, DH†; 105-1983).

A photograph of the 1977 bird, one of the few records inside Monterey Bay, appears in Roberson (1978) and on the cover of the June 1978 isssue of *Birding* (Vol. 10, No. 3). The Laysan Albatross is regular during winter well offshore California (see Sanger 1974) and reports are no longer reviewed by the CBRC.

COOK'S PETREL *Pterodroma cookii* (10 **) An immature female in a weakened condition found ashore at Santa Cruz SCZ 17 Nov 1983 subsequently expired and is now a specimen (WBT, #CAS 71447; 164-1984). Full details will be published elsewhere. This is the first time a Cook's Petrel in California was unquestionably iden-

tified; prior accepted records had been listed as *P. cookii/defilippiana* (see Binford 1985). This accepted specimen thus adds the species to the state list.

Cook's Petrel, breeding on islets off New Zealand, regularly spends the austral winter (June-Oct), at least in some years, north to Baja California, Mexico (AOU 1983). Birds of this type have been seen over the continental shelf (in the narrow zone of water depths from 1300-2200 fathoms) in Oct-Dec 1979 (see Luther et al. 1983, Binford 1983) and again in June 1985 (currently under review). They may yet prove to be a regular component of the summer/fall avifauna over deep water far offshore.

At the annual meeting in January 1986, the Committee voted to accept all records of *Pterodroma cookii/defilippiana/pycrofti* type petrels as Cook's Petrels, the one species known to occur here. Although such records are statistically listed as *P. cookii*, all but the specimen above are accepted with the following note: *P. defilippiana* and *P. pycrofti* are considered unlikely on known geographic range, but have not been eliminated by description. All previously accepted records are now considered to be Cook's with the above disclaimer. Some members believe record 71-1979 (bird #6), near the Davidson Seamount 50 miles sw. of Cape San Martin MNT on 17 Nov 1979, is identifiable to *cookii* by the photograph, though the majority still consider *defilippiana* not eliminated. Most agree *pycrofti* has been eliminated for this particular bird, a photo of which appears in Roberson (1985).

With the adoption of the disclaimer policy regarding *defilippiana* and *pycrofti*, the following two records were accepted as Cook's Petrel: one near the San Juan Seamount (85 miles south of Pt. Conception) SBA 14 Aug 1984 (RLP; 246-1984) and another about 65 miles sw. of Pt. Conception SBA 19 Aug 1984 (RLP; 247-1984). Both were over the continental shelf in waters 1500-1800 fathoms deep, consistent with other sightings.

Figure 1. Yellow-billed Loon, Lake Perris, Riverside Co., California, 22 Dec 1983.
Photo by Richard E. Webster

WILSON'S STORM-PETREL *Oceanites oceanicus* (19). One collected on Monterey Bay MNT 24 Aug 1910 (#MVZ 18742; 106-1984). One about 2 miles south of SE Farallon I. SF 29 Aug 1959 (GMcC, RS; 107-1984). One on Monterey Bay (6-7 miles west of Moss Landing) MNT 7 Oct-1 Nov 1967 (GMcC; 108-1984). One on Monterey Bay MNT 1 May 1978 (DR; 92-1983).

The 1910 record was the first for California and was originally published by Grinnell (1915). Since the 1967 record, from 1 to 4 birds have occurred on Monterey Bay nearly every fall. The 1978 bird is the first to be found in spring.

WEDGE-RUMPED STORM-PETREL *Oceanodroma tethys* (4). One on Monterey Bay about 10 miles west of Moss Landing MNT 2-9 Oct 1983 (RS; GMF, JF, RI, KK, JML; 77-1983/29-1984). This record encountered some procedural confusion. The 2 Oct bird (77-1983), found away from the large storm-petrel flocks, was originally circulated with another report from 9 Oct (138-1983). It was apparent to all committee members that these were two different individuals, and that the 9 Oct bird was not a Wedge-rumped Storm-Petrel; it was eventually rejected (see Unaccepted Records). Details of another 9 Oct sighting, from another boatload of birders, were obtained and accepted (29-1984). This acceptable 9 Oct bird was with the large storm-petrel flock over the Monterey submarine canyon. A majority of members felt the two sightings, a week apart, represented the same individual.

An important character used to separate the two 9 Oct birds was the amount of white visible on the flanks when the bird was sitting on the water; none was seen on the accepted Wedge-rumped, whereas much was present on the rejected bird. Showing apparent white while at rest is characteristic of Wilson's Storm-Petrel. Some members felt that this mark alone eliminated the possibility of Wedge-rumped Storm-Petrel. The accepted Wedge-rumped was very small (similar to Least Storm-Petrel *Oceanodroma microsoma*) and had a long triangular-shaped white rump patch extending nearly to the tip of the tail.

WHITE-TAILED TROPICBIRD *Phaethon lepturus* (1). An adult at Newport Bay ORA 24 May-23 June 1964 (WH†, GMcC; 43-1984). Photographs and full details of this remarkable bird, including its attempted copulation with a radio-controlled model glider, appear in Hetrick & McCaskie (1965).

BROWN BOOBY *Sula leucogaster* (7). An adult male off San Miguel Island SBA 3-5 July 1965 (HC†; 89-1984). A first-year bird off Santa Barbara Island SBA 29 Oct 1983 (ALH; 115-1983) was refound in more advanced plumage 25 Mar 1984 (NBB; 115-1984).

Published photographs of the San Miguel Island bird appear in McCaskie (1970) and Roberson (1980). They show the extensively pale hindcrown characteristic of males of the east Pacific race *brewsteri*. While the CBRC accepts the 1965 sighting, note that an adult Brown Booby was reported in this same area in July 1961 and again in June-July 1968 (McCaskie 1970). The CBRC welcomes details of these sightings to help determine if the same bird was involved. The two records accepted here are the only coastal records for California (a third record, from SE Farallon I. in 1983, is currently in circulation).

OLIVACEOUS CORMORANT *Phalacrocorax olivaceus* (3). One in flight at the Whitewater River mouth, Salton Sea RIV 30 July 1983 (GMcC, SSu; 66-1983). This is now considered to be the same individual, previously accepted (Morlan 1986), that was at the north end of the Salton Sea 1 Aug-10 Sep 1982 (76-1982) and attempted to nest at the south end of the Sea 27 Feb-5 Mar 1983 (37-1983).

ANHINGA *Anhinga anhinga* (1). A female at Lee Lake RIV 27 Nov 1983-9 June 1984 (LCB, JLD, JML, GMcC, JM, DR, REW†; 30-1984). This is the first California record.

This bird produced extensive dicussion regarding its status as a wild vagrant or a possible escape. The record was accepted (9-1) only after additional information was obtained of the recent occurrence of Anhinga in Sonora, Mexico (provided by SWC) and the general scarcity of the species in captivity (REW provided information that only one had been held recently by the San Diego Wild Animal Park and it was still present). Supporters of this bird as wild cited this data and an 1893 record from Arizona (Monson & Phillips 1981). The single dissenter cited the Committee's previous rejection of the Sweetwater Reservoir SD bird (Feb 1977 into fall 1980) and the Lake Merced SF bird (summer 1939), both of which were rejected on split votes as "origin questionable." In January 1986 the Committee voted to recirculate these two records.

REDDISH EGRET *Egretta rufescens* (11). One around south San Diego Bay SD 18 Dec 1982-26 Mar 1983 (GMcC, REW†; 49-1984) returning 18 Jan-15 Mar 1984 (JLD, GMcC, REW†; 45-1984). There are now 11 accepted records from California (10 from SD, 1 in VEN), but some 21 published reports remain unreviewed (with another 15 currently in circulation). This species was recently added to the review list after having been removed for several years.

YELLOW-CROWNED NIGHT-HERON *Nycticorax violaceus* (10). An adult at Harbor Slough LA 30 May-2 June 1963 (ABM†; 88-1984). An adult at Santa Margarita River mouth SD 9 May 1984 (LRH; 76-1984). The latter bird might be the same as the individual present at San Elijo Lagoon SD in 1982-1983 (records 88-1981, 81-1982, 37-1983; Binford 1985, Morlan 1985), but the majority considered it a different bird.

WHOOPER SWAN *Cygnus cygnus* (1). An adult near Grimes COL 17-19 Jan 1984 (LCB, RAE, AG†, GMcC, RS, REW†, JW; 21-1984). This bird, present with a flock of about 750 Tundra Swan (*C. columbianus*), is the first for California. Though delighting many observers during its 3-day visit, it disappointed many more by leaving before the weekend.

After debate regarding origin, the record was accepted (9-1) on the second round. Most persuasive to those supporting the record was the extensive checking (by LCB) of potential sources of escapes, including the Sebastiani Vineyards (which had 7 Whoopers in Jan 1984 but had an alibi for each bird), the San Francisco Zoo, Sea World in San Diego, and various game farms in northern California and Washington. Supporters also noted that Whooper Swans winter south to 35° N in Asia, are regular in the Aleutians, and once occurred in fall migration in southeastern Alaska. The date was appropriate for a vagrant and various other Siberian species visited the U.S. in winter 1983-84. The dissenter noted the lack of a pattern of records toward California, the known escapes in Ontario (1979; originally accepted locally and later retracted) and in Wisconsin (1985), and the fact that a list of bird breeders obtained from the California Dept. of Fish & Game showed at least 21 other potential sources of escapes that had not been checked. The Committee's evaluation was that the bird was more likely a wild bird than an escape.

The CBRC does not require irrefutable proof that a particular bird is wild or escaped. Rather, it weighs the evidence to reach a conclusion about the probable origin of a bird. All relevent information should reach the Committee prior to the balancing test. Observers are urged to submit not only field descriptions of birds which may or may not be wild, but facts on both sides of the issue as well.

EMPEROR GOOSE *Chen canagica* (32 **). One at Carmel MNT 28 Dec 1945-11 Jan 1946 (LW; 110-1984). At the time this was the southernmost record for the state. The Committee amended record 29-1978 (Luther et al. 1983) to reflect the entire date span 19 Dec 1977-22 Apr 1978 at Moss Landing MNT and the Pajaro River mouth MNT/SCZ.

The 1946 record illustrates that even very old reports can be researched, reviewed and accepted. The details submitted included a copy of the January 1946 issue of *The Sanderling*, the newsletter of the Monterey Peninsula Audubon Society, and much more thorough descriptions in the field notes of the late Laidlaw Williams. These field notes were donated to Hastings Natural History Reservation, a University of California field station, and thus were available to researchers. Active field observers are urged to provide for the eventual deposit of their notes in public facilities or museums, thereby providing a valuable resource to future generations.

GARGANEY *Anas querquedula* (3). A male at Lower Klamath NWR, SIS 29 Apr 1982 (JWF; 76-1983). The record fits well into a pattern of spring records in North America, and possibilities of an escape or a hybrid were considered and dismissed in committee comments.

TUFTED DUCK *Aythya fuligula* (19). One male at Lake Perris RIV 25 Nov 1983-5 Mar 1984 (JLD, JML, GMcC; 75-1984), with a second male there *2 Jan 1984* (JLD; 31-1984), are considered the same birds which wintered there Jan-Feb 1983 (previously accepted 53-1983; Morlan 1985). One male at Quail Lake LA 29 Dec 1983-7 Mar 1984 (WDC, KLG; 73-1984) is regarded as the same bird there in winters 1978-79 and 1979-80 (previously accepted 49-1980; Binford 1985, which also appeared in Cuddy Valley KRN as 80-1982; Morlan 1985). By a split vote, a slight majority favored listing it as the same bird, having been overlooked in this lightly-birded area in intervening winters. One male at the Stockton sewage ponds SJ 17-22 Mar 1984 (DGY; 70-1984).

The Committee evaluated, for statistical purposes, previously accepted records of birds returning winter to winter. Their decisions follow:

> One male at Lake Sherwood VEN 25-31 Jan 1973, 31 Dec 1973-2 Feb 1974, 30 Oct 1974-12 Jan 1975, 19 Nov 1975-late Feb 1976, and 19 Nov 1976-Jan 1977 (25-1974, 25-1976) is considered a single record.
>
> One male at Lake Merritt, Oakland and nearby Alameda ALA 28 Oct 1976-28 Mar 1977, 27 Oct-6 Nov 1977, and 2 Dec 1978-13 Jan 1979 (126-1976, 24-1978, 13-1979) was joined by a female 28 Oct-12 Dec 1976 (46-1976, 24-1978), for a total of two records.
>
> One male at Limantour MRN 12 Jan-17 Apr 1978, 14 Dec 1978-10 Mar 1979, 29 Sep 1979-12 Jan 1980, and 3 Oct-27 Dec 1980 (78-1978, 12-1979, 44-1981, 237-1980) is considered one record. A second male appeared there 9 Nov-12 Dec 1980 (44-1981, 237-1980).

These amendments result in a total of 19 records of Tufted Duck through March 1984. An additional 8 published reports remain unreviewed and another 4 are pending.

SMEW *Mergellus albellus* (1). One male at Foster City SM 19 Dec 1983-22 Jan 1984 (AG†, JML, GMcC, REW; 24-1984) returned for its third winter (same bird as 95-1981; Binford 1985). It remains the only record for the state.

MISSISSIPPI KITE *Ictinia mississippiensis* (12). A first-summer bird at Long Beach (California State University campus) LA 21 June 1982 (KLG; 118-1983). A first-summer bird at Oasis MNO 1 June 1984 (ML, JML, REW; 116-1984).

COMMON BLACK-HAWK *Buteogallus anthracinus* (1). An adult at Thousand Palms Oasis (Nature Conservancy Reserve) RIV 13 Apr 1985 (BED, DLH, LRH; 46-1985). This apparent overshooting spring migrant is the first record of a species that had been anticipated to occur in California (Jehl 1980). It had previously occurred as near as Ehrenberg and the Bill Williams Delta, Arizona (on the Colorado River), and near Las Vegas, Nevada. This bird was seen only in flight but was carefully described and sketched. In comments, Committee members considered and rejected the possibilities of an escape or confusion with Black Vulture *Coragyps atratus*, dark phase Hook-billed Kite *Chondrohierax uncinatus*, Mangrove Black-Hawk *B. subtilis*, Great Black-Hawk *B. urubitinga*, Harris' Hawk, Solitary Eagle *Harpyhaliaetus solitarius*, and Zone-tailed Hawk. While not all these tropical hawks are likely to occur wild here, many raptors are kept in zoos and are potential escapes. All should be considered in reports of vagrant raptors.

HARRIS' HAWK *Parabuteo unicinctus* (2 **). Three around Imperial Dam IMP 19 Dec 1958 (GMcC; 138-1984). One adult at Topock Marsh, near Needles SBE 22 Nov 1962 (GMcC; 47-1984). One adult about 20 miles north of Blythe RIV 28 Nov 1964 (GMcC; 46-1984).

This species was resident along the lower Colorado River (Grinnell & Miller 1944) and the CBRC no longer reviews records prior to 1960. Severe declines occurred in the early 1960s and the 1964 bird may be the last wild bird seen in California. Five reports from the 1970s were rejected on origin or identification questions. Governmental efforts are currently underway to re-establish the species along the Colorado River.

ZONE-TAILED HAWK *Buteo albonotatus* (17). An adult near Bonsall SD 7 Dec 1982-27 Feb 1983 (GMcC; 5-1983) returned 10 Dec 1983-14 Feb 1984 (GMcC, REW†; Figure 2; 135-1983). A second adult was near Fallbrook SD (about 8 miles away from the Bonsall bird) *26 Dec 1982-8 Jan 1983* (REW†; 27-1984). One of these birds may be the same individual at nearby Whelan Lake 13 Jan 1979 (previously accepted 40-1979; Binford 1985), but the majority considered all three to

Figure 2. Zone-tailed Hawk, Bonsall, San Diego Co., California, 16 Dec 1983.
Photo by Richard E. Webster

be different birds. An adult at Furnace Creek Ranch, Death Valley NM, INY 31 May 1983 (AH; 92-1984). An adult at Morongo Valley (Big Morongo Reserve) SBE 2 May 1984 (RB; 93-1984). The latter record was previously unpublished.

GYRFALCON *Falco rusticolus* (2). An immature collected near Lower Klamath Lake (not Tule Lake as cited by Roberson 1980 and others) SIS 23 Oct 1948 (#MVZ 15104; 87-1984). This bird was the first for California, shot by a quail hunter when it dived at his dog (Jewett 1949).

YELLOW RAIL *Coturnicops noveboracensis* (18). Eighteen specimens collected in late fall and winter between 1863-1936, as detailed below. This species, now exceptionally rare in the state, was apparently regular in winter during this early era and nested east of the Sierra Nevada (Grinnell & Miller 1944). The Quincy PLU record might be a migrant or a breeding bird.

15 Dec 1863	Martinez CC 128-1984	#MVZ 4460
24 Apr 1894	Quincy PLU 122-1984	#MVZ 57968
16 Nov 1898	Pt. Reyes Station MRN 121-1984	#MVZ 81933
27 Dec 1903	Locks Marsh SCZ 26/134-1984	#MVZ 91349
27 Dec 1903	Locks Marsh SCZ 135-1984	#MVZ 91350
31 Oct 1905	Locks Marsh SCZ 129-1984	#MVZ 91351
5 Nov 1905	Locks Marsh SCZ 130-1984	#MVZ 91352
5 Nov 1905	Locks Marsh SCZ 131-1984	#MVZ 91353
5 Nov 1905	Locks Marsh SCZ 132-1984	#MVZ 91354
12 Nov 1905	Locks Marsh SCZ 133-1984	#MVZ 91355
19 Oct 1910	Suisun Marsh SOL 125-1984	#MVZ 24900
28 Dec 1910	Suisun Marsh SOL 124-1984	#MVZ 17250
1 Jan 1911	Suisun Marsh SOL 123-1984	#MVZ 17251
30 Nov 1911	Los Banos MER 126-1984	#MVZ 22141
30 Nov 1911	Los Banos MER 127-1984	#MVZ 22142
17 Nov 1912	Rincon Valley SON 119-1984	#MVZ 23339
31 Jan 1914	Corona RIV 136-1984	#MVZ 54552
22 Feb 1936	Pt. Reyes Station MRN 120-1984	#MVZ 100442

The 1936 Pt. Reyes Station bird and the 7 from Locks Marsh SCZ were not published by Grinnell & Miller (1944). Morlan, in comments, noted that he had searched for Locks Marsh as found on old maps, and discovered that today it is a parking lot in Scott's Valley.

MONGOLIAN PLOVER *Charadrius mongolus* (2). An adult in breeding plumage at the Santa Clara River mouth VEN 26 July-2 Aug 1983 (ASt; JLD, GMcC; 65-1983). The Committee regards this as the same individual which appeared here the previous Aug (previously accepted 74-1982; Morlan 1985).

AMERICAN OYSTERCATCHER *Haematopus palliatus* (5). An adult at Fraser Pt., Santa Cruz Island SBA 26 Feb 1984 (PEL; 51-1984). This is considered to be one of up to three individuals present here year-round since first noted on 11 Nov 1966 (previously accepted 92-1980; Binford 1983). It shows the spotted breast characteristic of the Pacific Coast race *frazari*. This bird could be more than 18 years old, but some members noted that the Eurasian Oystercatcher *H. ostralegus* has been known to live longer than 35 years (Terres 1980).

LITTLE CURLEW *Numenius minutus* (1). A juvenile in the Santa Maria River Valley, near Betteravia SBA 16 Sep-14 Oct 1984 (PEL; JLD, RAE, AH†, JML, ML, CM, GMcC, JM, DR†, AS†, BT†; 215-1984). This first state record was seen by hundreds of observers after being relocated on the ranch of the Mahoneys, who graciously

permitted birders to enter their property. The excitement of the find, surely one of the most remarkable in North America, was described by Schram (1985). Full details and color photos appear in Lehman & Dunn (1985).

LITTLE STINT *Calidris minuta* (1). A juvenile at the Bolinas sewage ponds MRN 14-22 Sept 1983 (DHE; LCB, AG†, AH†, NGH, PL, JM, BDP, RS†; 62-1983). This bird was originally identified as a Rufous-necked Stint *C. ruficollis*, but a review of photos provided by Ed Greaves and W. Ed Harper of juvenile stints on Attu Island, Alaska, in Sep 1983 raised serious questions regarding this identification. The issue was only settled to the satisfaction of the Committee after Lars Jonsson of Sweden and Peter J. Grant of Britain provided comments. The combination of characters they used to identify the bird as a Little Stint have since been published by Grant and Jonsson (1984) and Veit and Jonsson (1985), and illustrated in Jonsson's color plates, prints of which he provided prior to publication.

This is the first record south of Alaska in western North America. The discussion and controversy it spawned led to a better understanding of the identication of juvenile stints.

BUFF-BREASTED SANDPIPER *Tryngites subruficollis* (22). One at Greenhills Cemetery, Palos Verdes Peninsula LA 5-17 Sep 1971 (JLD; 57-1984). Two on SE Farallon I. SF *29* Aug 1978 (PRBO; 112-1984). One at Manchester Beach MEN 2-3 Sep 1978 (BBu, RM; 113-1984). One in breeding plumage at the Arcata marina HMB 3-4 May 1980 (LD, RLeV; 95-1983). One at the Lancaster sewage ponds LA 3-9 Sep 1983 (BWK; HC†, JLD, GMcC, REW; 67-1983).

The Arcata bird is the only spring record. Accepted fall birds, apparently all juveniles, occurred between 26 Aug-22 Oct. In some autumns, such as 1978, unusually large numbers have been present.

JACK SNIPE *Lymnocryptes minimus* (1). One collected near the Sutter Buttes BUT 20 Nov 1938 (#MVZ 94397; 86-1984) is the only California record. The circumstances were described by McLean (1939). After some initial debate regarding the question of origin, the record was accepted (9-1) on the second round.

LITTLE GULL *Larus minutus* (21). An adult migrating north past Pigeon Pt. SM 19 Apr 1979 (BS; 98-1983). Up to three at the Stockton sewage ponds SJ over the past 6 years. A second-winter bird was first noted 20 Mar-2 Apr 1979 (previously accepted 21-1979; Luther et al. 1983). Since then adults have occurred on the following dates and numbers: 4 Feb-31 Mar 1980, 17 Oct 1980-31 May 1981 (JML†; 93-1983), 26 Oct 1981-30 Apr (2)-9 May (2) 1982, 18 Oct 1982-22 Apr (2)-26 Apr (3)-30 Apr(3)-9 May (2) 1983 (JML, DR†; 1/42-1984), and 18 Oct 1983-15 Apr(2)-28 Apr (2) 1984 (LCB, JML, GMcC, BDP, REW†; 85-1983). A second-winter bird at Monterey MNT 3-*13* Apr 1982 (AB, RLB†; 94-1983). A photo of this bird was published by Roberson (1985).

COMMON BLACK-HEADED GULL *Larus ridibundus* (9). An adult in winter plumage at Long Beach LA 10 Sep-13 Oct 1983 (LRH; GMcC; 70-1983). An adult at the Stockton sewage ponds SJ 18 Oct 1982-10 Apr 1983 (DR†; 2-1984) and 11 Oct 1983-9 Apr 1984 (LCB, JML, GMcC, BDP, REW†; Figure 3; 84-1983). The latter bird has been present six consecutive winters since first discovered in March 1979 (previously accepted 20-1979; Luther et al. 1983). Complete dates of occurrence in its first four winters were 20-*30* Mar 1979, 4 Feb-31 Mar 1980, 7-12 Nov 1980, 10 Nov 1981-8 Apr 1982.

PARAKEET AUKLET *Cyclorrhynchus psittacula* (16). Fifteen specimens (#CAS 10291-10305), all showing head plumes, taken by Rollo Beck on Monterey Bay MNT on the following dates: twelve on 13 Jan 1908 (records 139-1984 through 148-1984 and 150-1984, 151-1984), one on 15 Jan 1908 (149-1984) and one on 30 Jan 1908 (152-1984). Another was picked up on the Pacific Grove MNT shoreline on 28 Jan 1908 (153-1984). These were reported by Beck (1910) and Grinnell & Miller (1944). One found dead just north of the Pajaro River mouth SCZ 28 Apr 1947 (skeleton #MVZ 119009; 200-1984).

The numbers in 1908 are truly extraordinary. Nothing like it has occurred since, though it is not known if the species was regular off-shore before 1908. The 1947 specimen posed an interesting question of identification, as only a photo of the skull was available for review, but reference to Ainley et al. (1980) was useful. Several members considered whether the bird should be accepted as a California record since a dead bird might be carried by ocean currents for some distance (see Grinnell 1938). The British Ornithologists' Union Committee does not accept records of "tide-line corpses" on the "A" British list, but CBRC members considered the record acceptable, as this state is far from other jurisdictions.

BLACK-BILLED CUCKOO *Coccyzus erythropthalmus* (6). An immature mist-netted at Pt. Reyes NS, MRN 22 Sep 1965 (LKH†; 12-1984). Details of this first California record were published by Van Velzen (1967).

SNOWY OWL *Nyctea scandiaca* (34 **). An immature male collected at Humboldt Bay HMB 19 Dec 1916 (#CAS 44914; 157-1984). Grinnell & Miller (1944) list another 18 birds from northwestern California that winter.

BROAD-BILLED HUMMINGBIRD *Cynanthus latirostris* (19). An immature male in the Tijuana River Valley SD 9-11 Sep 1983 (JLD; 58-1984). An immature male in Bundy Canyon, Brentwood LA 6-17 Nov 1983 (KLG, GMcC; 119-1983). A female at Goleta SBA 31 Dec 1983-18 Jan 1984 (JLD, PEL, GMcC; 53-1984).

RUBY-THROATED HUMMINGBIRD *Archilochus colubris* (1). An adult male collected at Sagehen Creek, 11 km north of Truckee NEV 15 May 1975 (RC; #U.C. Davis WFB-972; 100-1984).

This bird has an interesting history (Cole & Engilis 1986). The specimen was distinguished from Broad-tailed Hummingbird (*Selasphorus platycercus*) by its a) black non-iridescent feathers extending from the chin to the auriculars, b) rectrices lacking any rufous and forming a distinct fork (5 mm in depth), and c) upperparts deep forest green.

GREATER PEEWEE *Contopus pertinax* (12). One at Griffith Park, Los Angeles LA 31 Oct 1982-16 Feb 1983 and 10 Nov 1983-23 Mar 1984 (KLG†; GMcC; 88-1983). This bird wintered here five consecutive years, occurring in its first three years 7 Nov 1979-30 Jan 1980, 1 Nov 1980-23 Feb 1981, and 13 Jan-20 Feb 1982 (previously accepted 19-1980; Binford 1983).

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (9). A male collected at Furnace Creek Ranch, Death Valley, NM, INY 23 Nov 1968 (GMcC, GSS; #LACM 66519; 84-1984). One at Palomarin, near Bolinas MRN 12-14 Nov 1983 (DDeS, RS†; 132-1983). One at Goleta SBA 5 Dec 1983 (PEL; JLD, REW†; 126-1983). One at Arcata HMB 13 Jan-12 Mar 1984 (RAE; 55-1984). One at Los Osos (Sunset Terrace Golf Course) SLO 22 Jan-20 May 1984 (DB, CB; JLD, CM†, GMcC, REW†; 23-1984).

The 1968 specimen was the first record for California; details were published by Suffel (1970). It agrees well with the northern race *olivascens* (KLG, in comments). The Arcata bird is the northernmost record in North America; a photograph was published in *AB* 38:354, but inexplicably was not submitted to the Committee.

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (8). One banded at Palomarin, near Bolinas MRN *19* Oct 1974 (ICT†; 83-1984). One at Pt. Loma SD 20 Sep 1983 (REW; JLD, GMcC; 69-1983).

SULPHUR-BELLIED FLYCATCHER *Myiodynastes luteiventris* (5). One at Pt. Loma SD 16-20 Sep 1983 (REW†; JLD, GMcC; 68-1983). One at Harbor Lake, Harbor City LA 8 Oct 1983 (DS; 116-1983).

These reports stirred questions about the potential of the tropical Streaked Flycatcher (*M. maculatus*) to reach California. Members noted that Streaked Flycatcher has a highly migratory race, is variable in plumage between races, and is given conflicting field marks in neotropic guides [e.g., Peterson & Chalif (1973), Ridgely (1976), Meyer de Schauensee & Phelps (1976)]. J. Van Remsen, Jr., of Louisiana State University, provided comments on the Pt. Loma record, confirming the importance of chin color (pale in Streaked, dark in Sulphur-bellied) and of the much broader maler stripe and frosty look to the crown in Sulphur-bellied. Other characters, emphasized by some authors, are of little value, including the color of the lower mandible and the color of the underparts (though Sulphur-bellied averages yellower). Because the field descriptions conflicted on some of these marks, this record pointed up the value of clear photographs, even if taken at some distance.

SCISSOR-TAILED FLYCATCHER *Muscivora forficata* (11). One on East Anacapa Island SBA 24 May 1974 (NW†; 54-1984). One in the Tijuana River Valley SD 17 Oct 1974 (JLD; 59-1984). One at San Elijo Lagoon SD 8-10 Nov 1974 (JB†, JLD, GMcC; 60-1984); the photo was published by Roberson (1980). One at Pt. Lobos State Reserve MNT 27-30 May 1978 (LAM; SPH; 105-1984). One at Needles SBE 26 July 1978 (SWC†; 82-1984). One at Pt. Gorda MNT 15 May 1983 (R&JP; 67-1984). One at Furnace Creek Ranch, Death Valley NM, INY 28-30 May 1984 (JML, ML, GMcC, REW; 98-1984).

The two MNT records were not published in *American Birds*, but were accepted by Roberson (1985). This species has been on and off the CBRC review list several times, leading to observer confusion on submission of details. Details of all records are desired. To date, there are only 11 accepted California records, but at least 42 published reports remain unreviewed.

DUSKY WARBLER *Phylloscopus fuscatus* (2). One at Hayward Regional Shoreline, Hayward ALA 28-29 Sep 1984 (JSL, JM; SFB†, BBa, LCB, KFC, RAE, AG†, JAG, WEG, KLH, AH†, JML, PEL, ML, TM, GMcC, DN, BDP, DR, AS†, J&ES, JW; Figure 4; 216-1984). This is the second record for California, the first having occurred on SE Farallon I. 27 Sep 1980 (Luther et al. 1983). Useful discussions of identification were found in Johns & Wallace (1980), Svensson (1984) and Williamson (1962). Photos were reviewed by Peter J. Grant in Britain, who pointed out that even the partial wing formula could be discerned in photos provided, pointing directly to Dusky or Radde's Warbler (*P. schwarzi*). A review of all characters led to his conclusion that "I don't think you could have got a more certain Dusky." Important points separating the species from other *Phylloscopus*, including Radde's, included 1) brown (not olive-toned) upperparts, 2) brownish-buff (not yellowish) wash to underparts, brightest on undertail coverts, 3) sharp "tchack" call, recalling Lincoln's Sparrow (*Melospiza lincolnii*), 4) the comparatively small, thin bill, 5) a rather even and short supercilium palest before the eye, and 6) the rather dark legs. Committee comments

considered, and rejected, the possibilities of *P. fulvigiventer, griseolus, armandii, neglectus, ijimae, amoenus, olivaceus, cebuensis, ruficapillus, laurae, umbrovirens, laetus, budongoensis* and *herbert*, and the possibility of an escape, which was judged to be nil.

This surprising bird inhabited a most unremarkable small patch of grass and weeds, actively feeding on the ground or fluttering briefly in the foliage. This being only the second *Phylloscopus* ever found south of Alaska, it is not surprising that the possibility of Swainson's Warbler (*Limnothlypis swainsonii*) was originally considered, but the frequent flicking of wings and fanning of tail dispelled this initial impression. During its 2-day stay it was viewed by over 200 observers, 23 of whom submitted details or photographs, which must set a CBRC record for documentation! Published photos appear in *AB* 39:99.

WOOD THRUSH *Hylocichla mustelina* (6). One captured in weak condition and collected in the Tijuana River Valley SD 18 Nov 1967 (AMC†, GMcC; #SDNHM 36353; 81-1984). One at Golden Gate Park, San Francisco SF 21 Dec 1983-23 Mar 1984 (JM; LCB, AG†, RCH, JBM, BDP; 136-1983).

Details and a photograph of the San Diego bird, the first record for the state, were published by McCaskie (1971). The San Francisco bird was unexpected, being the first to winter in the state. It was quite elusive, but had begun singing by the time of its departure.

RUFOUS-BACKED ROBIN *Turdus rufopalliatus* (4). One at Newport Bay (Newport Nature Center) ORA 1 Jan-11 Apr 1983 joined by a second bird *23 Feb-5 Mar* (JLD, KLG, BWK, GMcC, JM, SJR, DR†, REW; 6-1983). One at Furnace Creek Ranch, Death Valley NM, INY 5 Nov 1983 (DA, GMcC, REW†; 86-1983).

A photo of one Newport Bay bird appeared in *AB* 37:339 and was deposited in SDNHM, but inexplicably was not submitted to the Committee. The presence of two birds in this small urban park was surprising, but members considered, and rejected, the possibility of escapes. The Death Valley bird is the northernmost record of this species anywhere.

GRAY CATBIRD *Dumetella carolinensis* (16). One at Pt. Loma SD 7 Nov 1983-13 Mar 1984 (JLD, GMcC, REW†; 87-1983). This is the third time this species has wintered in California.

WHITE WAGTAIL *Motacilla alba* (1). An adult at Arroyo de la Cruz SLO 5-8 Oct 1984 (GPS†; SFB†, JLD, JML, PEL, ML, CM, GMcC, JM, EO†, BDP, DR, AS; Figure 5; 218-1984). The extensively white greater and median coverts, forming a large white patch on the wing, identified the bird as an adult. At that age the dark (not mostly white) flight feathers eliminated Black-backed Wagtail (*M. lugens*). The combination of black eyeline and pale gray upperparts are indicative of the Alaska/Siberia breeding race *ocularis*.

A wagtail at this same site 9 Oct 1983, originally submitted as a White/Black-backed Wagtail, has since been accepted as a White Wagtail and as probably the same individual which returned the following autumn (TME†; CM; 38-1984). This bird, now accepted for 1983 and 1984, is the first White Wagtail in California. The standard reference on the identification of the species pair is Morlan (1981).

WHITE/BLACK-BACKED WAGTAIL *Montacilla alba/lugens* (6 **). A first-winter bird at Long Beach (Los Angeles River channel) LA 4 Nov 1982-18 Jan 1983 (JLD, KLG, GMcC, J&ES†, REW; 119-1982). This is the first wagtail to winter in California.

Figure 3. Common Black-headed Gull (left) and Bonaparte's Gulls (*Larus philadelphia*). Stockton, San Joaquin Co., California, 19 Jan 1984.
Photo by Richard E. Webster

Figure 4. Dusky Warbler, Hayward Regional Shoreline, Alameda Co., California, 28 Sep 1984.
Photo by Albert Ghiorso

RED-THROATED PIPIT *Anthus cervinus* (41). One banded on SE Farallon I. SF 3 Nov 1968 (HR†; 13-1984). Up to six birds present in the Tijuana River Valley SD 19-27 Oct 1974 (2 on 19 Oct, 3 on 2 Oct, 6 on 21 Oct, dwindling numbers from 22-27 Oct; GMcC; JLD, JM, DR; 61-1984).

SPRAGUE'S PIPIT *Anthus spragueii* (19). One west of Blythe RIV 2 Jan 1984 (DK; 74-1984). This is only the second record from the lower Colorado River Valley. The species winters regularly in small numbers in southern Arizona (Monson & Phillips 1981).

PHILADELPHIA VIREO *Vireo philadelphicus* (43). An immature male collected on Southeast Farallon I. SF 14 Sep 1969 (#CAS 68462; 14-1984). A female collected at Kelso SBE 10 Oct 1976 (#SBCM 30274; 7-1984). One at Pt. Reyes NS (New Willows) MRN 4 Oct 1981 (B&CY; 33-1982). One at Pt. Reyes NS (Mendoza Ranch) MRN 26 Sep 1983 (LCB; 72-1983). One at Pt. Reyes NS (New Willows) MRN 26-27 Sep 1983 (LCB; AG†; Figure 6; 73-1983). One on the Oxnard Plain, near Oxnard VEN 2-3 Oct 1983 (S&DiR; 128-1983). A female collected at Kelso SBE *2 Oct* 1983 (#SBCM 38070; 6-1984). One at Morongo Valley (Big Morongo Reserve) SBE 3 Oct 1983 (REW; 122-1983).

Very small numbers of this species appear each fall, although the five found during the single week 26 Sep-3 Oct 1983 are exceptional. Directions to specific Pt. Reyes spots are found in Morlan (1978) and Richer (1984). The 1981 Pt. Reyes bird elicited extensive comments, eventually circulating three rounds and being accepted (10-0) only on the final round following a discussion at the annual meeting. The most important point of controversy involved the description of the lores: "dark line through eye which quit at or just into lores slightly." Some members contend Philadelphia Vireo always has dark lores, while others insist some freshly molted fall birds can appear pale-lored. This issue remains unresolved, although the doubters were willing to accept a bird which showed partially dark lores, as described.

BLUE-WINGED WARBLER *Vermivora pinus* (2). One collected in Wyman Canyon INY 16 June 1954 (#MVZ 132435; 104-1984). One at Morongo Valley (Big Morongo Reserve) SBE 2 Oct 1983 (LSa; BAC; 83-1983). The Wyman Canyon bird was the first record for California; details were published by Miller & Russell (1956). Blue-winged Warbler remains one of the most difficult species to find in the state. The Morongo bird, like all others reported, was seen on but a single day.

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (23). One at Montecito, Santa Barbara SBA 23-24 Oct 1960, collected 24 Oct (#SBMNH 4326; 69-1984). A male collected on SE Farallon I. SF 5 July 1972 (#CAS 68648; 20-1984). A male banded on SE Farallon I. SF 14 Sep 1974 was found dead 16 Sep (#CAS 68917; 19-1984).

The Montecito bird was the first for California and was published by Richardson & Richardson (1961). It is labelled a first-year male, but its plumage appears to be that of a female (PEL, in comments). The specimens accepted here are the three oldest accepted records, but three other reports from 1962-1972 remain unreviewed.

GOLDEN-CHEEKED WARBLER *Dendroica chrysoparia* (1). An immature male collected on SE Farallon I. SF 9 Sep 1974 (#CAS 68546; 18-1984). This extraordinary record was the first for California; details were published by Lewis et al. (1974).

YELLOW-THROATED WARBLER *Dendroica dominica* (32). One banded on SE Farallon I. SF 8 July 1969 (HR†; 17-1984); a photo appears in DeSante (1980). A singing male in Northridge LA 7 May 1981 (HS; 41-1982). A pair at Eureka HMB 12

June-1 July 1982 (RAE; 27-1983). One found dead at Santa Monica (Palisades Park) LA 7 Jan 1983 (#LACM 100690; 111-1983). A singing male in Lincoln Park, San Francisco SF 6 June 1983 (AH†; 91-1984). A singing male at Pt. Lobos State Reserve MNT *24* May 1984 (DR; 103-1984).

All showed whitish lores, characteristic of the western race *albilora*. The Santa Monica bird is the first specimen for California and the first to occur in winter. The Eureka pair were observed nest-building, but nesting success was not documented.

GRACE'S WARBLER *Dendroica graciae* (11). One banded at Pt. Loma SD 8 Sep 1968 (AMC†; 16-1984); details and a photo were published by Craig (1970). One at Zuma Beach LA 30 Sep 1979 (HB; 114-1983). One near Carpinteria SBA 22 Feb-21 Mar 1982 (KLG; 103-1983) and returning 22 Oct 1983-27 Mar 1984 (JLD, PEL; 62-1984). The Committee considers this the same individual present 24 Feb-21 Apr 1980 (previously accepted 119-1980; Binford 1983), though it was not located during brief coverage in winter 1980-1981. Thus by 1983-1984 it had returned for its fourth winter. One at Pt. Loma SD 7 Sep 1983 (REW; 124-1983). An adult male at Montecito SBA 28 Sep 1983-14 Mar 1984 (PEL, GMcC; 114-1984). This is considered the same individual first located 6 Jan-2 Apr 1980 (previously accepted 23-1980; Binford 1983), now returning for its fifth winter, having been present 4 Nov 1980-28 Mar 1981, 10 Oct 1981-10 Mar 1982 and 11 Oct 1982-1 Apr 1983.

PINE WARBLER *Dendroica pinus* (9). One on SE Farallon I. SF 16 Oct 1979 (PH, DT; 197-1980). An immature female at Pt. Loma SD 13 Oct 1983 (REW; GMcC; 78-1983). One at Pt. Loma SD 12-23 Dec 1983 (REW†; GMcC; 127-1983). A male at San Luis Obispo (Cal. Poly. campus) SLO 9 Jan-14 Mar 1984 (CM; LCB, JLD, JML, GMcC, DR, REW†; 32-1984). A singing male at Furnace Creek Ranch, Death Valley NM, INY 31 May 1984 (REW; 137-1984).

R.E. Webster appears to have a special affinity for this species, having discovered three of the birds accepted here, including the Death Valley male which provides the

Figure 5. White Wagtail, Arroyo de la Cruz, San Luis Obispo Co., California, 7 Oct 1984. *Photo by Stephen F. Bailey*

first accepted spring record in California. The San Luis Obispo bird, which was seen by mobs, began singing before its departure. It is the second Pine Warbler known to have wintered in the state. The Farallon individual provoked much controversy and extensive comment. Its original circulation was interrupted when it was resubmitted as an "Olive Warbler," but this suggestion was unanimously rejected. Details of this ill-fated detour and of the record itself were published in Binford (1985). It was eventually accepted (10-0) as a Pine Warbler on a fourth and final round following discussion at an annual meeting.

PROTHONOTARY WARBLER *Protonotaria citrea* (35). One collected in Mission Canyon, Santa Barbara SBA 25 May 1953 (#SBMNH 4258; 68-1984). This was the first record for California; details were published by Hillman & Erickson (1954). One at Malibu Lagoon LA 18 Sep 1983 (KLG; 63-1983). One at Morro Bay State Park SLO 19-20 Oct 1983 (GPS; CM; 39-1984). One at Furnace Creek Ranch, Death Valley NM, INY 19-20 May 1984 (GMcC; 97-1984).

WORM-EATING WARBLER *Helmintheros vermivorus* (25). One found dead at Carmel Highlands MNT 16 Dec 1967 (#PGMNH 2343; 102-1984). One in the Tijuana River Valley SD 10 Sep 1974 (JLD, GMcC; 63-1984). One in Long Beach (Recreation Park) LA 6 Nov 1981, returning 5 Nov 1982-9 Mar 1983 (BED; 137-1983). One at Zuma Creek mouth, Malibu LA 15 Oct-18 Dec 1983 (KLG; 120-1983). One at Goleta (San Jose Creek) SBA 23 Dec 1983-11 Mar 1984 (JLD, PEL, GMcC, BDP, DR, REW; 41-1984).

The Carmel Highlands bird was the first for northern California. After some debate, the CBRC considers the Long Beach bird to be a different individual than one present at nearby Whaley Park 5 Nov 1981-21 Mar 1982 and 1-5 Nov 1982 (previously accepted 5-1982; Binford 1983).

LOUISIANA WATERTHRUSH *Seiurus motacilla* (1). One collected at Mecca RIV 17 Aug 1908 (#MVZ 1105; 187-1984). This was the first state record; details were published by Miller (1908). The status, distribution and identification of California waterthrushes were summarized by Binford (1971a,b).

KENTUCKY WARBLER *Oporornis formosus* (12). A male banded at Pt. Loma SD 4 June 1968 (AMC†; GMcC; 15-1984). This was the first record for California; a photo and description were published by Craig (1970). A female at Morongo Valley (Big Morongo Reserve) SBE 4 Oct 1981 (DRW; 23-1983). One at Deep Springs MNO 27 May 1982 (JLD; 102-1983). A male at Del Mar SD 14-16 Nov 1983 (JLD, GMcC, REW†; 89-1983). A female at Goleta (San Jose Creek) SBA 16 Dec 1983-5 Mar 1984 (JLD, JML, PEL, DR, REW; 11-1984). A male at Corona del Mar ORA 29 Dec 1983-6 Mar 1984 (CM; JLD, GMcC, REW; 25-1984).

The latter two birds are the first to winter in California.

CONNECTICUT WARBLER *Oporornis agilis* (13). An immature on SE Farallon I. SF 29 Sep 1975 (JWn; 4-1984). An immature at Pt. Reyes NS (Lighthouse) MRN 26 Sep 1983 (LCB; 74-1983).

Both of these birds engendered numerous comments, although both passed unanimously. Both were brown-hooded birds. The Farallon bird was repeatedly seen walking, jerking its tail upward, which most members felt was characteristic of the species. The Pt. Reyes bird was seen only perched or in flight. Though there was a wide white eyering, it was broken slightly, and some members felt this was unusual. However, the olive-brown hood, the white (not yellow or buffy) eyering, the buffy yellow (not rich yellow) belly and the very long undertail coverts were considered, in combination, to be conclusive.

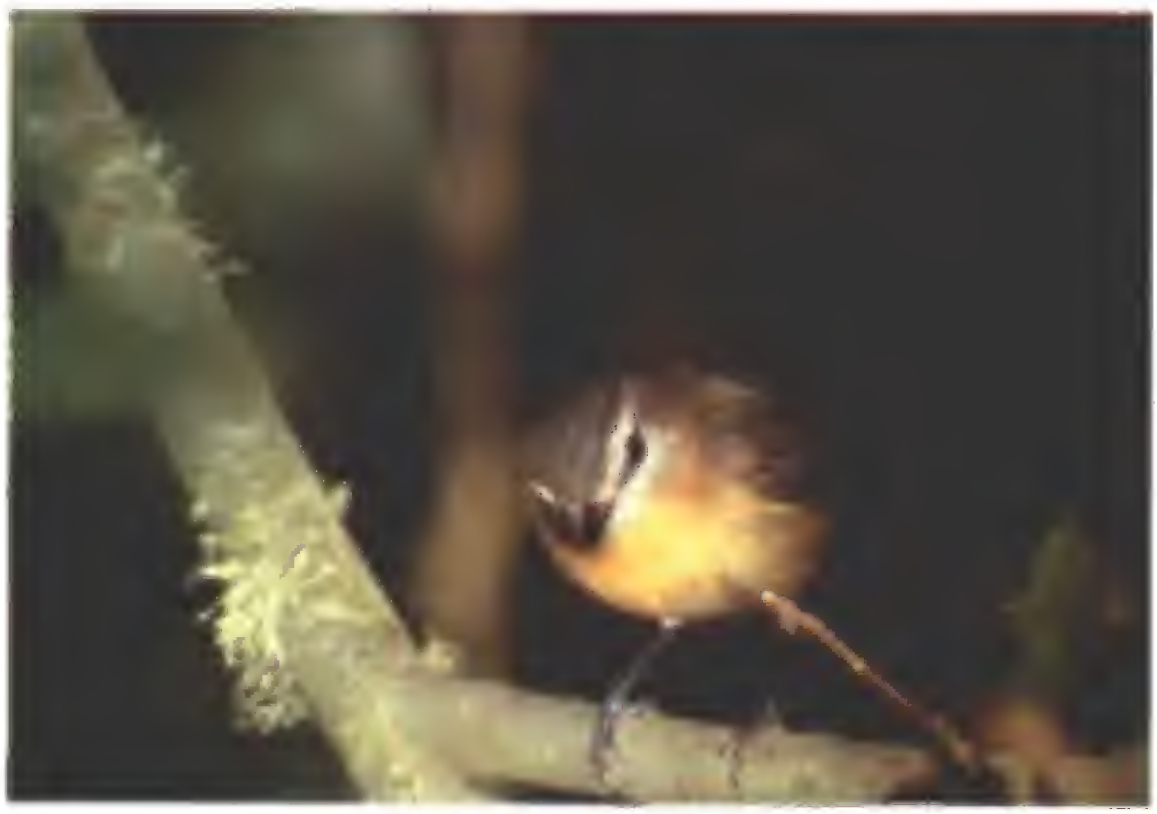

Figure 6. Philadelphia Vireo, Point Reyes National Seashore, Marin Co., California, 27 Sep 1983 *Photo by Albert Ghiorso*

Figure 7. LeConte's Sparrow, Nearys Lagoon, Santa Cruz, Santa Cruz Co., California, 30 October 1983. *Photo by Albert Ghiorso*

MOURNING WARBLER *Oporornis philadelphicus* (19). An immature male at Pt. Reyes (Fish Docks) MRN 27-30 Sep 1979 (RAE, AG†, GMcC, JM, DR, RS; 61-1979); a photo was published in Roberson (1980). An immature female at Pt. Loma SD 8 Oct 1982 (REW; 111-1982). An immature female at Big Sycamore Canyon, Pt. Mugu State Park VEN 18 Sep 1983 (HB; 130-1983). An immature female at Pt. Loma SD 20 Sep 1983 (REW; 123-1983).

The Pt. Reyes bird proved to be very controversial, having almost been published as "unaccepted" when additional photos of the bird were uncovered and ciruclated. It passed on its fourth round (9-1). There had been much concern about the color of the throat and the reliability of call-notes, eyering shape, and color of sides of breast in separating immatures of this species from the very similar MacGillivray's Warbler (*O. tolmiei*). The new photos showed a single black feather appearing on the lower throat, indicating the bird was a male (which makes throat color an academic argument, as immature males of both species may have off-white throats). In addition, recent years have added to our experience in dealing with fall *Oporornis* and some of the marks, thought to be untested in 1979, are now considered reliable.

RED-FACED WARBLER *Cardellina rubrifrons* (7). One collected at Brock Ranch, east of Holtville IMP 30 May 1970 (#SDNHM 37494; 80-1984). This was the first California record; details were published by McCaskie (1970b).

SCARLET TANAGER *Piranga olivacea* (26). An immature female banded on SE Farallon I. SF 29 Sep-2 Oct 1975 (JWn†; 5-1984). An immature male found dead at Malibu Lagoon LA 7 Nov 1982 (KLG; #LACM 100438; 112-1983). An immature male at Pt. Loma SD 16-17 Oct 1983 (GMcC, REW; 79-1983). An immature female on Pt. Loma SD 29 Oct 1983 (REW; 125-1983).

PAINTED BUNTING *Passerina ciris* (9). An adult male at Furnace Creek Ranch, Death Valley NM, INY 4 Nov 1972 (GMcC; 50-1973). An immature at Goleta SBA 3 Oct 1983 (PEL; 131-1983).

The Death Valley bird is the first adult male to be accepted. It was actually published as accepted in the Committee's second report (Winter & McCaskie 1975), with the notation that eight members thought the point of origin questionable. This vote was taken before the Committee had adopted its current voting forms, which at the time did not have a "reject, origin questionable" category as we do now for votes against birds thought to be escapes. Due to this confusion, the record was recirculated. Committee members now have over 10 years' more experience in evaluating the potential of escaped birds vs. wild vagrants. Given the now-established pattern of Oct-Nov records of Painted Buntings in California, the known presence of adult vagrants of other species, the paucity of information on captivity status in the U.S., and the vagrant trap location, the Committee, on recirculation, accepted this record unanimously.

CASSIN'S SPARROW *Aimophila cassinii* (9). One banded on SE Farallon I. SF 11-12 July 1969 (MC†; 36-1984). An immature female present, eventually collected, on SE Farallon I. SF 22-23 Sep 1969 (#CAS 68475; 9-1984). An adult female present, eventually collected, on SE Farallon I. SF 2-4 June 1970 (#CAS 68520; 10-1984). One banded on SE Farallon I. SF 17 June-6 July 1982 (TMc, CS†; 91-1982). SE Farallon I. now accounts for nearly half of the accepted records.

FIELD SPARROW *Spizella pusilla* (1). One present and banded on SE Farallon I. SF 17 June-9 July 1969 (HR†; 77-1984). This was the first state record; details and an in-hand photo were published by Robert (1971).

BAIRD'S SPARROW *Ammodramus bairdii* (2). An immature collected on SE Farallon I. SF 28 Sep 1969 (#CAS 68476; 8-1984) was the first state record.

LE CONTE'S SPARROW *Ammospiza leconteii* (7). An immature at Nearys Lagoon, Santa Cruz SCZ 28-30 Oct 1983 (DG; AG†, KH; Figure 7; 80-1983).

SHARP-TAILED SPARROW *Ammodramus caudacuta* (23). One at Pt. Pinos (Crespi pond), Pacific Grove MNT 12 Oct 1975 (SAL; 28-1984). Two (one banded, one unbanded) at Bolinas Lagoon (Pine Gulch) MRN 19-31 Dec 1983 (JP; 121-1983) are considered returning individuals. Up to three have been present here since winter 1980-81 (previously accepted 222-1980, 120-1982; Binford 1985, Morlan 1985).

RUSTIC BUNTING *Emberiza rustica* (1). One at Stone Lagoon HMB 7-8 Jan 1984 (GJS†, RAE; GSL; 33-1984) is the first California record. This same winter, termed the "Siberian Express" by Lehman (1984), also brought the first record of this species to British Columbia, Canada. A previous report for California (see Garrett & Dunn 1980) has not been submitted to the Committee.

SNOW BUNTING *Plectrophenax nivalis* (17). One at north spit, Humboldt Bay HMB 7-17 Nov 1975 (JLD; 66-1984).

COMMON GRACKLE *Quiscalus quiscula* (11). A male at Baker SBE 24-30 May 1984 (GMcC, REW; 99-1984). A female at Pt. Reyes NS (Nunes Ranch) MRN 13-16 June 1984 (LCB; KFC, JM, MLR; 94-1984).

BRAMBLING *Fringilla montifringilla* (1). One at Crescent City DN 5 Feb-24 Mar 1984 (RAE; JLD, JML, GMcC, JM, DR, J&ES†, JWn; 44-1984). This is the first California record. The obliging female, discovered by Jim Rooney in his back yard and identified by Erickson, delighted all by remaining there for 2 months. It occurred during a winter, now known as the "Siberian Express" (Lehman 1984), which brought other Bramblings to British Columbia, Washington, Oregon, Utah, Colorado and Minnesota — a spectacular and unprecedented invasion!

COMMON REDPOLL *Carduelis flammea* (1). A large flock, from which 5 specimens (4 females, 1 male) were taken, at Eagle Lake LAS 30 Nov-23 Dec 1899 (#CAS 47883, 47884, 47885; #MVZ 5542, 5543; 159-1984). These were first reported by Willard (1902). This flock constitutes the first state record.

UNACCEPTED RECORDS, identification questionable

SHORT-TAILED ALBATROSS *Diomedea albatrus*. A "sub-adult" photographed at 36°14.9'N, 123°01.8'W, about 80 miles WNW of Monterey MNT 20 Apr 1978 (100-1978). Details of this report, along with a photo, were published by Helm (1980) and were initially accepted by the Committee (Luther et al. 1979). Roberson requested a recirculation based upon a study of plumages of this species and correspondence with Terence R. Wahl and Dennis Paulson regarding Washington and Oregon reports, including one published by Wahl (1970) which he no longer considers a Short-tailed Albatross. On recirculation and after discussion at an annual meeting, the Committee agreed that the photograph was conclusively not of this species, representing possibly an old or aberrant Black-footed Albatross *D. nigripes* or a Black-footed X Laysan hybrid, which have been reported from Midway I. Among points wrong for Short-tailed were a) too short a bill, b) white (not dark) undertail coverts, c) lack of large white patches on upperwings, d) comparatively short and broad wings, e) lack of huge feet extending well beyond tail, and f) wrong facial and neck pattern. See Roberson (1980) for more details on this identification problem.

UNACCEPTED RECORDS, identification questionable

MANX SHEARWATER *Puffinus puffinus.* One off Pt. Pinos, Pacific Grove MNT 28 Oct 1977 (82-1982). One about 2 miles west of Carlsbad SD 28 Dec 1980 (92-1982). Both were rejected (1-9) on the grounds that the details were insufficient to document a first state record of a species which is difficult to separate from closely related species. The Pt. Pinos report was published by Roberson (1980), but was not accepted by Roberson (1985).

WEDGE-RUMPED STORM-PETREL *Oceanodroma tethys.* One on Monterey Bay MNT 9 Oct 1983 (138-1983). Another report of this species on this same date, but from another boatload of birders, was accepted (see Accepted Records). The Committee was convinced that this was a different bird (the accepted Wedge-rumped did not show white while resting on the water, whereas this bird did) and was nearly unanimously convinced (1-9) that this was not a Wedge-rumped. The majority felt it was probably a Wilson's Storm-Petrel, and some members noted that Murphy (1936) had described a small race (*O.o. chilensis*) from South America which might account for the apparent small size of this individual. This bird was accepted by Tucker (1984), a position which became controversial (Greenman & Tucker 1985). Not all observers submitted details, so this report might have been more thoroughly reviewed if more information had been available.

ANHINGA *Anhinga anhinga.* One-two birds at Potholes (now near Laguna Dam on the Colorado River) IMP 9-12 Feb 1913. These sightings were discussed by Brooks (1913) and Dawson (1916, 1923). Grinnell & Miller (1944) placed this species on their supplemental list because a specimen was not taken. The CBRC was sharply split (6-4) after four rounds on the issue of whether the early discussions contained sufficient details for the first state record. A 1983-1984 record was subsequently accepted, adding the species to the state list.

YELLOW-CROWNED NIGHT-HERON *Nycticorax violaceus.* One at Furnace Creek Ranch, Death Valley NM, INY 14 May 1984 (95-1984). If it had been accepted, this would have been the first record of a first-year bird in California. See Blom (1985) for a recent comment on this identification problem.

TRUMPETER SWAN *Cygnus buccinator.* One at the Chico oxidation ponds BUT 2 Jan 1982 (2-1982). It had been published in *AB* 36:326, but was defeated (6-4) on the fourth round.

MISSISSIPPI KITE *Ictinia mississippiensis.* One at Creighton Ranch Preserve TUL 10 June 1983 (82-1983). This was published in *AB* 37:1023 and the report called "well-described," but the Committee (2-8) did not agree.

GRAY HAWK *Buteo nitidus.* One seen briefly in flight near Bolinas MRN 16 June 1984 (21-1985). Most members expressed concern about the brevity of observation for a first state record. Several members commented that they felt this species was an unlikely vagrant to northern California and that even if a Gray Hawk were involved, it was most likely an escape from captivity.

YELLOW RAIL *Coturnicops noveboracensis.* One at upper Newport Bay ORA 12 Jan 1984 (22-1984). Most thought the possibility of an immature Sora *Porzana carolina* was not eliminated.

UNACCEPTED RECORDS, identification questionable

AMERICAN OYSTERCATCHER *Haematopus palliatus*. One at Pt. Lobos State Reserve MNT 3 Apr 1954 (111-1984). Two at Tomales Pt., Pt. Reyes NS, MRN 25 Feb 1981 (75-1983).

These are the only reports for northern California. The former had been widely accepted (e.g., McCaskie et al. 1979, Roberson 1980) but was recently rejected by Roberson (1985). Details could not be found despite efforts to locate them. Furthermore, the field notes of the late Laidlaw Williams make no mention of this species, despite his active birding at Pt. Lobos in April 1954. Normally the Committee does not review records which contain no details, but it was felt important to formally reject this record because it has long been cited as a positive record.

RUFOUS-NECKED STINT *Calidris ruficollis*. A juvenile seen briefly and distantly photographed in the Tijuana River Valley SD 10 Aug 1980 (238-1980). If accepted, this would have been the first juvenile recorded in California. After five circulations, the record was defeated (3-7). Those opposed felt the photos were inconclusive and the bird too briefly seen to obtain details adequate to address the numerous fine points in separating juvenile stints (see Grant & Jonsson 1984, Veit & Jonsson 1985 for a full discussion).

TEMMINCK'S STINT *Calidris temminckii*. A basic-plumaged bird at the Salinas River mouth MNT 6 Aug 1983 (51-1983). If accepted, this would have been the first state record; after three rounds it was defeated (4-6). Those opposed noted the brevity of observation, particularly of tail pattern seen only briefly in flight, expressed concern that the bird did not call, and questioned whether a basic-plumaged bird was likely in early August. Those favoring the record emphasized the correctly described shape, breast pattern and tail pattern.

COMMON BLACK-HEADED GULL *Larus ridibundus*. One at Lake Merritt, Oakland ALA 21 Nov 1983 (143-1977).

THICK-BILLED MURRE *Uria lomvia*. One at Otter Pt., Pacific Grove MNT 21 Jan 1978 (26-1978). This report, published as unaccepted and discussed in Binford (1983), was recirculated on the basis of a recently discovered photograph. After two circulations, the Committee decided (3-7) the original decision was correct.

GREEN VIOLET-EAR *Colibri thalassinus*. One at Berkeley ALA 18 Aug 1977 (159-1977). One near Iris Meadow, Mt. Pinos KRN 31 Aug-1 Sep 1977 (40-1978). Either report, if accepted, would have been the first for California.

Both were rejected after three circulations (Berkeley 2-8, Mt. Pinos 3-7) on split grounds. Five members opposed to the Berkeley report and four opposed to the Mt. Pinos bird expressed concern about identification. The descriptions accompanying both reports were comparatively brief for a first state record; a photo said to have been taken of the Mt. Pinos bird was never submitted (though would still be welcomed). Remaining "reject" votes were based on questions of origin, noting that this species has occurred in captivity in California. Those supporting the record(s) countered that those in captivity were of southern races from South America, separable in the field from the northern race (*thalassinus*), which has occurred as a vagrant in Texas, and felt the descriptions eliminated the southern races. Those opposed were either unimpressed with racial determination or expressed concern about the lack of intervening records from Arizona.

UNACCEPTED RECORDS, identification questionable

RUBY-THROATED HUMMINGBIRD *Archilochus colubris.* An adult male at Placerita Canyon LA 5 May 1984 (96-1984). Most members (3-7) expressed a reluctance to accept single-observer reports of this rarity, especially when the diagnostic black chin was not specifically described.

EASTERN WOOD-PEEWEE *Contopus virens.* One at Big Sycamore Canyon VEN 18-19 Oct 1974 (27-1975). This report, based on a calling (not singing) bird, was accepted in the third CBRC report (Luther et al. 1979) as the first state record. It was re-evaluated on the request of one observer (Dunn) who now doubts the identification. The 1974 bird gave a clear, descending whistle, thought at the time to be lacking in the repertoire of Western Wood-Pewee (*C. sordidulus*). More recent field work suggests that Western Wood-Pewee can give this clear call, while Easterns more typically give an upslurred "pweeeee" note and a sharp "chip." Most members (1-9) agreed the report should be retracted. It is clear from member's comments that much is left to be learned about the voices and plumages of these sibling species. For more information see Dunn & Garrett (1983).

YELLOW-BELLIED FLYCATCHER *Empidonax flaviventris.* One at Yucca Valley SBE 23 Oct 1982 (16-1983).

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer.* A molting bird at Cholame SLO 27 Sep 1982 (21-1983). The state of molt, early date (earliest accepted record is 12 Nov), and lack of the diagnostic call troubled most members.

SCISSOR-TAILED FLYCATCHER *Tyrannus forficatus.* One about 6 miles south of Big Sur MNT in May 1981 (56-1984).

SCARLET TANAGER *Piranga olivacea.* A female-plumaged bird at Deep Springs INY 30 May 1983 (44-1983). The presence of wingbar(s) on a spring bird concerned most members.

UNACCEPTED RECORDS, origin questionable (identification accepted)

BLACK VULTURE *Coragyps atratus.* One seen with a flock of Turkey Vultures *Cathartes aura* at Chico BUT 13 Apr 1972 (12-1972). This record was published as "unaccepted, origin uncertain" in the third CBRC report (Luther et al. 1979), but recirculated during the brief tenure of the "unresolved" category (see Binford 1983). It circulated for a fourth time when the "unresolved" category was abolished (see Binford 1985) and missed acceptance by the narrowest of margins (8-2). There are still no California records.

Those supporting the record noted that the bird was with migrant vultures at an appropriate date and latitude for vagrants for the southeast, was without cage wear, and was scarce in captivity. The two members still voting "reject, origin questionable" preferred to wait for some "intermediate" record between Arizona and northern California.

BLACK-TAILED GULL *Larus crassirostris.* An adult at the U.S. Naval Training Center on San Diego Bay SD 26 Nov 1954 was collected 28 Nov (143-1977). It was reported by Monroe (1955) and been variously accepted (AOU 1957, Small 1974,

Terres 1980) and rejected (Roberson 1980, Garrett & Dunn 1981, AOU 1983, Unitt 1984). Dates published in Small (1974) and AOU (1983) are in error.

The CBRC rejected this record (2-8) after three rounds. The majority suggested that the bird's presence at a U.S. Naval Base was attributable to heavy naval traffic between the range of this species (Japan, Korea) and San Diego during the post-Korean War period. They felt that ship-assistance, probably as a captive, was more likely than occurrence of a wild vagrant, noting the absence of records between the outermost Aleutian Islands and California. Some thought long-distance vagrancy to California possible, cited vagrant records in Thailand and Australia, but thought an immature more likely than an adult.

PAINTED BUNTING *Passerina ciris*. An adult male photographed at a feeder in Cambria SLO *7 Dec 1972-4 Mar 1973* (78-1984). A slight majority (4-6) felt an escaped cage bird to be more likely in winter than a genuine vagrant adult male. There are no accepted winter records in California.

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A COOK'S PETREL SPECIMEN FROM CALIFORNIA

WM. BRECK TYLER, Institute of Marine Sciences, University of California, Santa Cruz, California 95064

KENNETH BURTON, Dosen Bahasa Inggeris, Universitas Palangka Raya, Tunjung Nyaho, Palangka Raya, Kalteng, Indonesia

On the morning of 17 November 1983, Bob Moon found a Cook's Petrel (*Pterodroma cookii*) floundering in the driveway of his seaside home at 2-2702 East Cliff Drive, Santa Cruz, Santa Cruz County, California (37°N). Moon called the Native Animal Rescue Service, a local wildlife rehabilitation center, but the bird expired before the center's volunteers could respond. They retrieved the carcass, however, and delivered it to us for identification. To the best of our knowledge, it is the first specimen of Cook's Petrel for the continental United States and the first land record for the species in the Northern Hemisphere.

Our preliminary examination revealed that the specimen was a small (length 30 cm) tube-nosed bird in extremely worn plumage. Its upperparts were uniformly dark gray, its wings and rump sooty black and brown, and its underparts all white except for a narrow dark margin on the underwing. The pale blue feet and high-contrast white inner vanes of the otherwise black primaries (Figure 1) indicated that it was one of the *Cookilaria* petrels (Palmer 1962); the subgenus *Cookilaria* comprises several species of small *Pterodroma* petrels (see Table 1). We identified this specimen as *cookii* on the basis of plumage characteristics, after comparing it with a series of *Pterodroma* petrels at the California Academy of Sciences. George Watson (*in litt.*) subsequently compared the specimen with those in the National Museum of Natural History and confirmed our diagnosis. The specimen was deposited in the California Academy of Sciences (71447).

The problem of identifying *Cookilaria* petrels is exacerbated by the lack of a universally accepted classification for the group. We combine those by Jouanin and Mougin (1979) and Bourne (1983), both of which accommodate Fleming's (1941) finding (based on skull morphology) that two parallel radiations of similar species exist within the group. Arrangements by other authors (e.g., Murphy 1936, Harper and Kinsky 1978, Harrison 1983) differ in varying degrees from the one presented here (Table 1).

Historically, three races of *P. cookii* have been described, as follows: *cookii* from breeding islands near New Zealand; *orientalis*, described by Murphy (1936), from unknown breeding areas believed to be in the southeastern Pacific; and *defilippiana*, from Mas Atierra and other islands west of Chile. Murphy described *orientalis* as larger than *cookii* and paler above (due to light feather edgings). Most authors now believe *orientalis* is invalid, having been based on freshly molted or juvenal plumage *cookii* (Palmer 1962, Bourne 1983, G. Watson *in litt.*). *P. defilippiana*, believed to be restricted to Chilean waters (Harrison 1983), is now considered by Jouanin and Mougin (1979), Bourne (1983) and the AOU (1983) to be a separate species, the Mas Atierra Petrel. Therefore, *P. cookii* is currently considered monotypic.

Whether observed at sea or in the hand, a *Cookilaria* petrel presents an identification challenge. Plumage differences between the taxa are subtle, and individual and seasonal variation within species are not adequately addressed in most field guides. In general, our Santa Cruz specimen resembles the Cook's Petrel pictured in the National Geographic Society guide (Scott 1983), but it has the upperwing pattern of the Pycroft's Petrel (*P. longirostris pycrofti*) illustrated in Harrison's guide (1983). The crown, nape and back of the Santa Cruz specimen are uniformly dark gray. The color is much darker than that usually depicted for *cookii* (Harper and Kinsky 1978, Harrison 1983), but the distinctly darker cap typical of *P. longirostris* is not evident. Apparently, among *Pterodroma* petrels, plumage becomes darker with wear; in fact, a very worn *cookii* may appear as dark as a fresh *longirostris*, but the former's cap and back will be concolor (Roberson 1980). The upperparts of this specimen are so dark that the M-shaped mantle pattern described for *cookii* by several authors (Roberson 1980, Harrison 1983) is not obvious. The central rectrices (dorsal side) are sooty brown, but the lateral ones are paler, ranging from light gray to white with a fine gray speckling (Figure 2). The lateral rectrices become sequentially paler toward the edge of the tail, and the inner vane of each feather is significantly paler than the outer vane, a pattern which is typical for *cookii* (Murphy 1936). The white outer tail mentioned as a diagnostic field mark for *cookii* by several authors (Roberson 1980, Harrison 1983) is probably most conspicuous when the rectrices are heavily worn. In contrast, *P.l. longirostris* usually has darker outer rectrices; *P.l. pycrofti*, however, is intermediate, often showing some white in the

Figure 1. Dorsal view of primaries of immature female Cook's Petrel (*P. cookii*: California Academy of Sciences 71447) showing contrasting white inner vanes.

outer tail (Oliver 1955, Roberson 1980). In the field, *P. defilippiana* is not considered to be safely separable from *cookii*, but in the hand it can be distinguished by the larger, more deeply grooved bill (Murphy 1936), darker eye patch, and longer tail (Harper and Kinsky 1978). All other *Cookilaria* petrels have even darker upperparts and more pronounced underwing patterns.

Cook's Petrels breed from October to April. During the austral winter (May-September), they leave their breeding areas (Oliver 1955) and disperse into the central and eastern Pacific. The range of dispersal and migration routes are not well known. Most records are from waters off Peru, northern Chile, and Baja California (Murphy 1936, Roberson 1980, Pitman 1986), but considerable movement through the central Pacific has been noted (Pitman 1986). The northernmost records are from the vicinity of the western Aleutians (Roberson 1980).

During the period 3 October through 1 December 1979, 21 sightings of *Cookilaria* petrels were made 50 to 200 km off the coast of California, from Point Piedras Blancas (35°40'N) to Point Arena (39°N; Roberson 1980). These sightings represent the northernmost records along the west coast of North America (excluding the Aleutian records). Because *P. defilippiana* is nearly identical to *P. cookii* under field conditions, the identification of these birds, as well as several others seen off southern California and one on the Salton Sea during summer 1984 (McCaskie 1984, R. Pitman *in litt.*), is currently unresolved; all are under consideration by the California Bird Records Committee.

Figure 2. Dorsal view of rectrices of immature female Cook's Petrel (*P. cookii*; CAS 71447).

The distribution of Cook's Petrels at sea is almost certainly related to patterns of sea surface temperature and associated oceanographic factors. Bourne (1983) says that Cook's Petrels prefer waters somewhat cooler than those frequented by other *Cookilaria*, but he does not mention any specific thermal range. Previously, it was thought that Cook's Petrels were associated with subpolar waters (4.0 to 13.9°C) in both hemispheres (Bourne, in Palmer 1962), but especially those of the sub-Antarctic Zone (Murphy 1936). However, current evidence shows that the species should be considered subtropical. The species' nesting islands are located in subtropical waters, very near the sub-Tropical Convergence. Breeding birds could easily forage in the cold productive waters of the sub-Antarctic Zone, but in fact are rarely recorded there (Watson 1975). During the austral winter, when waters nearer the colony become colder, the birds depart the area (Oliver 1955). Recent pelagic surveys have found that *cookii* occurs frequently in subtropical (14 to 21.9°C) and tropical (22+ °C) waters (Ainley and Boekelheide 1983, Pitman 1986). In the eastern Pacific, most records are from mild oceanic waters (approximately 15 to 25°C) seaward of cold-water upwelling zones (Murphy 1936, Roberson 1980, Pitman 1986). Pitman's data show also that Cook's Petrels are scarce in the very warm tropical

Table 1. The subgenus *Cookilaria*, after Jouanin and Mougin (1979) and Bourne (1983).

Taxon	**English Name**	**Breeding Range Center**
Pterodroma [c] *hypoleuca*	Bonin Petrel	Bonin and Volcano Islands (south of Japan), Leeward Hawaiian chain
P. nigripennis [a,c]	Black-winged Petrel	Southwest Pacific
P. axillaris [a,c]	Chatham Island Petrel	Southeast Chatham Island (east of New Zealand)
P. cookii [b]	Cook's Petrel	Little and Great Barrier Islands (northern New Zealand)
P. defilippiana [b]	Mas Atierra Petrel	Juan Fernandez Islands (west of Chile)
P. longirostris longirostris [b,d]	Stejneger's Petrel	Juan Fernandez Islands (west of Chile)
P. longirostris pycrofti [b,d]	Pycroft's Petrel	Northeast of New Zealand
P. leucoptera leucoptera [b,d]	Gould's Petrel	Cabbage Tree Island (eastern Australia)
P. leucoptera brevipes [b,d]	Collared Petrel	Southwest Pacific
P. leucoptera caledonica [d]	New Caledonian Petrel	New Caledonia
(undescribed)[d]	———	Solomon Islands

[a]Together form a superspecies (Jouanin and Mougin 1979).
[b]Together form a superspecies (Jouanin and Mougin 1979).
[c]Together form a superspecies (Bourne 1983).
[d]Together form a species, the White-winged Petrel, *P. leucoptera* (Bourne 1983).

regions of the eastern Pacific, suggesting that records from tropical waters are probably birds in transit.

Although Cook's Petrels have been recorded in cold (4-5°C) water (Wahl 1978), the waters adjacent to the coast of California probably are usually too cold (10-17°C) for the species. The 1979 sightings and the present specimen were recorded during the warmest season (early autumn) and in unusually warm years. Weak and very strong El Niño conditions prevailed off Point Sur (36°N) during 1979 and 1983, respectively (Breaker 1983). Hydrographically, waters in the reported sighting locations (Davidson Seamount and northwest of Point Arena) are characterized by persistent warm-core (16-19°C) eddies that closely approach the California coast (Simpson et al. 1983, K. Briggs pers. comm.).

As evidenced by its worn plumage (G. Watson *in litt.*) and underdeveloped ovary (L. Thompson pers. comm.), the Santa Cruz specimen is an immature female. Given the October-November dates of occurrence relative to the nesting season, many of the California records likely have been of immature or nonbreeding individuals. Most late records of austral-breeding Sooty Shearwaters (*Puffinus griseus*) in California waters also pertain to immatures (E. Chu pers. comm.).

Our examination of the specimen's digestive tract revealed only irregular strips of thin translucent plastic (up to 1 x 3 cm) in the foregut, and several squid beak fragments and four small plastic particles (various colors, all < 1 cm across) in the gizzard.

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Cook's Petrel *Sketch by Keith Hansen*

NOTES

OBSERVATION OF COPULATION BETWEEN A NON-NESTING ADULT AND SUBADULT BALD EAGLE IN CALIFORNIA

BARRETT A. GARRISON, Department of Wildlife Management, Humboldt State University, Arcata, California 95521 (present address: 4252 Mason Lane, Sacramento, California 95821)

Bald Eagle (*Haliaeetus leucocephalus*) copulatory behavior has been described for wild and captive adult birds (Herrick 1932, 1934; Broley 1952; Gerrard et al. 1979; Wiemeyer 1981), but not, as far as I know, between adults and subadults. Gerrard et al. (1980) observed a marked 4-year-old female in subadult plumage adopt copulation solicitation posture with an adult male, but no copulation was observed. Breeding of subadults has been rarely recorded (Hoxie 1910, Bent 1937). A 3-year-old male in adult plumage nested with an adult female and successfully fledged one young (D.A. Hammer unpubl. data). In this note I describe copulation between an adult male and a subadult female that apparently was not followed by successful nesting.

From 11 January to 23 March 1980 I studied Bald Eagles at Ruth Reservoir, Trinity County, California. An adult eagle present from 11 January to 28 February 1980 was the male of a pair that was resident there from 1976 to 1978. On 1 March 1980 I observed a second Bald Eagle fitting the description of a subadult in the fifth-year class (Southern 1964, 1967). This bird looked much like an adult, except the head and neck were streaked with brown, the tail had a diffuse brown terminal band approximately 8 cm high, and the breast, belly and back had considerable white speckling. This subadult was frequently seen soaring and perching with the male. Because the subadult was larger than the male, I assumed it was a female.

Between 0715 and 0720 on 16 March I observed two copulations. The female was perched on a shoreline tree and snag while the male circled approximately 10-30 m above her. The female uttered high-pitched gull-like screams as the male flew down to her. In one case, he landed directly on her back. In the other instance, he landed on a branch 1 m above her, hopped down to her branch, and gave several wing-out bows. Copulation ensued and lasted approximately 10 seconds, with considerable wing-flapping by the male and vocalizations by the female. In both cases, the male flew directly off the female and eventually flew out of sight. These observations are similar to published descriptions of adult-adult copulations (Herrick 1932, 1934; Gerrard et al. 1979).

Despite repeated visits to the lake throughout the breeding season, I observed no other copulations and found no evidence that the birds nested in 1980. The male was seen infrequently during the following breeding season after the disappearance of the female on 18 January 1981. My observations combined with those of Hammer (unpubl. data) and Gerrard et al. (1980) suggest that males may be capable of successfully reproducing at an earlier age than females. More data are needed on the sex and age class of Bald Eagle breeding pairs to answer this question.

I thank Laurence Binford, James Fraser, David Garcelon, Joseph Ganey, Mark Martell, Donald Spencer and Stanley Wiemeyer for critical review of the manuscript, and Six Rivers National Forest and Ronald Escano for financial and logistical support during the study.

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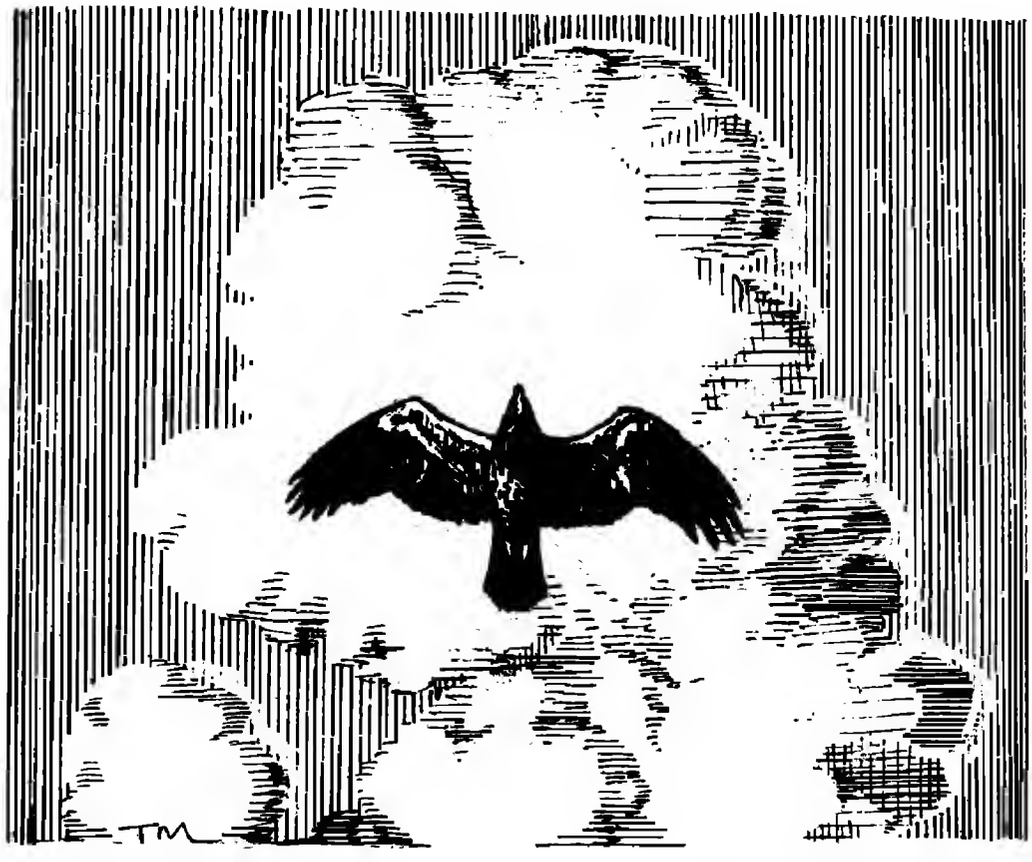

Subadult Bald Eagle *Sketch by Tim Manolis*

PREY REMAINS FROM GOLDEN EAGLE NESTS IN CENTRAL ARIZONA

WADE L. EAKLE, School of Renewable Natural Resources, 214 Biological Sciences East, University of Arizona, Tucson, Arizona 85721 (present address: Dames and Moore, 7500 North Dreamy Draw Road, Suite 145, Phoenix, Arizona 85020)

TERYL G. GRUBB, USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Forestry Sciences Laboratory, ASU Campus, Tempe, Arizona 85287

The food habits of the Golden Eagle (*Aquila chrysaetos*) in North America have been well documented. Olendorff (1976) summarized the available data to date from the literature. Bloom and Hawks (1982), Collopy (1983) and Marr and Knight (1983) documented prey remains collected from Golden Eagle nests in various regions of the western United States. However, the food habits of Golden Eagles in Arizona have not been described. Willard (1916) reported White-tailed Deer (*Odocoileus virginianus*) and domestic livestock being killed and fed upon by eagles, but this is the only information for the entire state. This note documents the first recorded collection of prey remains from Golden Eagle nests in central Arizona.

We collected prey remains from nests in Coconino, Gila, Maricopa and Yavapai counties incidental to entering the nests to obtain measurements for an unrelated study comparing Bald Eagle (*Haliaeetus leucocephalus*) and Golden Eagle nest structure (manuscript in preparation). Entering 15 nests from 9 territories, we collected remains from 9 nests between 18 June and 12 July 1985. Six territories were located in pinyon-juniper habitat (*Pinus* spp.-*Juniperus spp.*), two in Sonoran desertscrub, and one in Ponderosa Pine (*Pinus ponderosa*). The remains from three nests in one territory are considered one collection because of the close proximity of the nests to one another (<5 m). The number of individual prey items at each nest was determined by the maximum number of body parts present (e.g., feet, mandibles, skulls). Prey remains were identified in the field, by comparison with museum specimens and with the aid of a dichotomous key (Glass 1951).

A total of 38 prey items representing 12 species was collected (Table 1). Mammals made up 78.9%, birds 18.4% and reptiles 2.6%. No evidence of domestic livestock was noted in the remains. Black-tailed Jackrabbit (*Lepus californicus*) and Rock Squirrel (*Spermophilus variegatus*) remains were found in approximately 86% and 57%, respectively, of the nests from which prey remains were collected, indicating their importance to nesting eagles in central Arizona. Our results are comparable with those reported by Olendorff (1976) on a continent-wide basis, 83.9% mammals, 14.7% birds and 1.0% reptiles. No previously unreported prey species were collected.

Table 1. Prey remains from Golden Eagle nests in central Arizona, 1985.

Prey item	Occurrence			
	Individuals (N = 38)		Nest collection (N = 7)	
	N	%	N	%
Reptiles				
Gopher Snake (*Pituophis melanoleucus*)	1	2.6	1	14.3
Subtotal	1	2.6		

Table 1 (Cont.)

Prey item	Occurrence			
	Individuals (N = 38)		Nest collection (N = 7)	
	N	%	N	%
Birds				
Turkey Vulture (*Cathartes aura*)	1	2.6	1	14.3
Red-tailed Hawk (*Buteo jamaicensis*)	2	5.3	2	28.6
Mourning Dove (*Zenaida macroura*)	1	2.6	1	14.3
Great Horned Owl (*Bubo virginianus*)	1	2.6	1	14.3
Common Raven (*Corvus corax*)	1	2.6	1	14.3
Unidentified birds	1	2.6	1	14.3
Subtotal	7	18.4		
Mammals				
Black-tailed Jackrabbit (*Lepus californicus*)	14	36.8	6	85.7
Rock Squirrel (*Spermophilus variegatus*)	6	15.8	4	57.1
Unidentified woodrat (*Neotoma* spp.)	1	2.6	1	14.3
Gray Fox (*Urocyon cinereoargenteus*)	2	5.3	2	28.6
Striped Skunk (*Mephitis mephitis*)	3	7.9	3	42.8
White-tailed Deer (*Odocoileus virginianus*)	1	2.6	1	14.3
Unidentified mammals	3	7.9	3	42.8
Subtotal	30	78.9		
Total prey items	38	100.0		

We would like to thank Timothy Smith and Arlen Allen, U.S. Bureau of Reclamation helicopter pilots, whose skill and expertise made our study logistically possible. Joseph Yarchin, Northern Arizona University, also assisted in the field. This note is derived from Bald Eagle research jointly funded by the USDA Forest Service, U.S. Fish and Wildlife Service, and U.S. Bureau of Reclamation.

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Accepted 15 July 1986

Golden Eagle *Sketch by Narca Moore-Craig*

WESTERN BIRDS HAS A NEW EDITOR

As long as anyone can remember, Alan Craig has been the editor of *Western Birds*.

Thirteen years, and thirteen volumes, to be exact; ever since *Western Birds* appeared as the "mature adult" form of the fledgling journal *California Birds*, in its fourth year of publication.

Actually, Alan was there at the beginning, as one of the original editors of *California Birds*. Indeed, Alan wrote the first sentence that appears on page one of the first issue of the first volume of the journal, just as he would write the first sentence to appear in *Western Birds*.

Needless to say, then, *Western Birds* and, indeed, Western Field Ornithologists, owe a great deal of their current stature in the ornithological community to Alan. Our pride in our journal and our organization is in large part pride in the results of long hours of work Alan has selflessly devoted for the past 17 years.

Alan's accomplishments as editor have been many. A stickler for detail, he has produced issue after issue virtually error-free. He has maintained high standards for the quality of the information presented in the journal's pages. But perhaps his most valued and lasting contribution has been his willingness to nurse "greenhorn" authors—the student and amateur field ornithologists for whom Western Field Ornithologists and *Western Birds* came into being—through their first published papers. I know, because I was one.

But Alan's long stint (no, that isn't a new species of *Calidris*) as editor has taken its toll on other aspects of his life. Work and other commitments forced Alan to tender his resignation a couple of years ago—a resignation the board was unable to accept, until now, because of an inability to find anyone willing and able to fill his shoes.

We are now pleased to announce that Philip Unitt has volunteered to take on the editorship of *Western Birds* in the fine tradition established by Alan Craig.

Philip brings excellent credentials to the job. A member of Western Field Ornithologists since its inception, Philip has made substantial contributions to field ornithology in Southern California, many of these being published in *Western Birds* over the years. His most notable achievement to date has been the monumental task of summarizing the wealth of information about what is perhaps the most ornithologically complex California county, resulting in *The Birds of San Diego County*. In addition to being a widely respected ornithologist, Philip is a technical editor by profession. Most importantly, Philip brings a strong commitment to the enhancement of field ornithology in the West that we know will serve him well as the editor of *Western Birds*.

And so the editorship of your journal has passed to good hands. We will miss Alan's steady guidance, but we are also happy to see him find time at last for other goals in life. And we will always be aware of the indelible mark of quality that is his legacy to *Western Birds*.

Tim Manolis, Acting President

PRESIDENT'S MESSAGE

The recent return of WFO's president, Dr. Laurence C. Binford, to Illinois has left a major gap not only on the inside front cover of *Western Birds*, but in the ranks of bird students in the West. Laurie leaves behind a legacy of commitment and leadership that, as far as western field ornithologists are concerned, has brought us to the doorway of an exciting future for amateur field ornithology in western North America. We wish him only the best in future endeavors.

ANNUAL MEETINGS, PAST AND FUTURE. Approximately 160 members and friends of WFO, including 47 new members, attended the 11th Annual Meeting in Sacramento, California, 7-9 February 1986.

Among the highlights of the meeting were a jam-packed workshop on breeding bird atlas efforts in the West, an excellent series of informative papers during the Saturday session, an enthusiastically debated workshop on field identification, and a round-the-world cruise presented at the banquet by Arnold Small. Brisk, sunny skies prevailed for the wide-ranging field trips.

The vitality of WFO depends entirely on the level of participation by its members. It was thus very encouraging to see such a high level of intensity and involvement sustained through the meeting. All who helped put on the convention deserve considerable thanks for making it a success.

The 1987 Annual Meeting is scheduled for 21-23 August at Western Washington University in Bellingham, Washington. The scenery should be glorious, and the shorebird migration—well, who knows what might turn up! Past President Terry Wahl is heading up the local committee. More details will be forthcoming.

NEW TREASURER/MEMBERSHIP SECRETARY FOR WFO. Art Cupples of Sherman Oaks, California, was appointed treasurer and membership secretary for WFO at the Sacramento convention, replacing Garth Alton. Garth deserves much thanks for his years of service to the organization. The new treasurer brings a strong financial background to an often thankless but vitally important position.

YELLOW-BILLED CUCKOO PETITION. On May 15, 1986, WFO joined with eight environmental and wildlife organizations in submitting a formal petition to the U.S. Fish and Wildlife Service requesting that the western race of the Yellow-billed Cuckoo, *Coccyzus americanus occidentalis*, be added to the federal endangered species list over a major part of its range (Washington, Oregon, Idaho, Nevada and California).

The decision to put WFO at the forefront in calling for endangered species status for the cuckoo was made at the Sacramento convention's Board of Directors' meeting. Members of WFO and other western field biologists have long been concerned about the cuckoo's status in the region. The most recent detailed report on the cuckoo in California appeared in *Western Birds* (Vol. 15:49-80) in 1984. Much critical habitat in California remains threatened by destruction and alteration.

Addition of the cuckoo to the federal list apparently has been held up because of the general impression that populations of the species in Arizona and New Mexico are still relatively healthy. However, the status of these

populations, and of any remnant populations that may still exist in the Northwest and the intermountain states, remains to be established quantitatively. Given the loss and alteration of riparian habitat throughout the West, the cuckoo deserves concern throughout its range. Observers in the region are encouraged to contribute information in support of the petition to list the cuckoo. This information should be provided to regional offices of the Fish and Wildlife Service or to the Office of Endangered Species at the Service's headquarters in Washington, D.C.

Tim Manolis, Acting President

BULLETIN BOARD

WFO ANNUAL MEETING

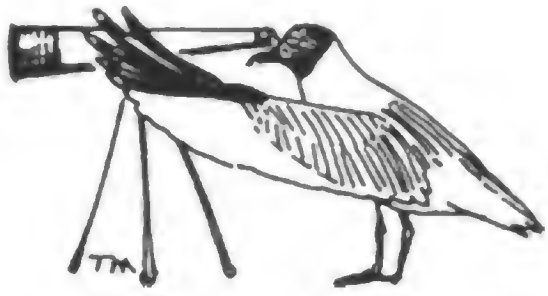
WFO's 12th annual meeting will be held 21-23 August 1987 at Western Washington University, Bellingham, Washington. The program will include discussions of distribution, identification, and atlas mapping. There will be field trips to nearby areas of interest such as shorebird habitat and the Cascade mountains. For further information contact T.R. Wahl, 3041 Eldridge, Bellingham, WA 98225, (206) 733-8255.

1987 WESTERN BIRD BANDING ASSOCIATION MEETING: CALL FOR PAPERS AND DEMONSTRATIONS

The 1987 WBBA meeting, 9-11 October at Tucson, Arizona, will emphasize techniques useful to field biologists. There will be workshops on special methods of netting, trapping, making traps, capturing raptors, marking (from hummingbirds to eagles), ageing, sexing, laparoscopy, cloacal lavage, and tissue and blood sampling. If you have developed a useful technique, plan to come and share it with others. If you need to learn a new technique, plan also to participate in the program. Please contact Dr. Stephen M. Russell, Department of Ecology and Evolutionary Biology, University of Arizona, Tucson, Arizona 85721.

British birdwatcher and photographer, of raptors, shorebirds, and gulls especially, wishes to exchange letters, photos, and possibly reciprocal visits with West Coast birders/photographers of similar interests. Please contact Paul Doherty, 10 Cheriton Way, Maidstone, Kent, England ME16 OPH, England. (Readers of *Western Birds* may look forward to seeing some of Paul's fine photographs on future covers.—Ed.)

IDENTIFICATION QUIZ



A white goose with pink bill and feet and black primaries should not present much of an identification problem: the choice would be either Snow Goose (*Chen caerulescens*) or Ross' Goose (*C. rossii*). Even so, a single adult individual that spent the winter of 1984-1985 in Upper Newport Bay, Orange County, California, caused a certain amount of consternation for many observers. Those viewing it at a distance, where body size estimates were difficult, noted the longer bill with prominent "grinning patch" and tended to identify it as a Snow Goose. It was so reported on the 1984 Christmas Bird Count in that area. Since the bird spent much of its time among bread-mooching American Coots and Mallards at the local "let's-feed-the-ducks" place, other observers, myself included, first saw it at very close range (less than 10 feet) and were strongly influenced by its overall small size and more rounded head profile to call it a Ross' Goose. This discrepancy prompted closer examination by several observers and a consideration of all field marks of the two species.

Ross' Goose is a small bird, little larger than a Mallard, with a short stubby two-toned bill (blue or greyish at the base) that lacks the "grinning patch." The Snow Goose on

the other hand is clearly a much larger bird; Snow Geese are, on the average, more than twice the body weight of Ross' Geese. The head and neck of a Snow Goose are proportionally larger and the bill, complete with "grinning patch," is longer than in a Ross' Goose. The juncture of the feathers of the lores and the base of the upper mandible forms a straight line in a Ross' Goose and a sharply curved arc in a Snow Goose. Both species have a distinctive blue phase (see illustrations in Field Guide to the Birds of North America, National Geographic Society) although it occurs at very low frequencies in Ross' Goose populations (McLandress and McLandress, Auk 96:544-550, 1979). There are also recognizable vocal differences between the two species.

The bird in question lacked the very stubby bill of a Ross' Goose and had the "grinning patch" of a Snow Goose. The bill did not appear as long as in a typical Snow Goose and the "grinning patch" was somewhat smaller than usual. The bill showed some blue coloration at the base but was not as sharply two-toned as in a Ross' Goose. The head was not as massive and angular as in a Snow Goose or as diminutive and rounded as in a Ross' Goose. The juncture of the loral feathers and upper mandible formed only a slightly rounded arc. In size, the bird was larger than a typical Ross' Goose but seemed smaller than a typical Snow Goose, particularly when seen side by side with Mallards or American Coots.

All of the above suggested to several observers that the bird was a hybrid. Fred Cooke, who has extensive experience with Snow Geese, examined black and white photographs and a color slide of the bird in question and concurred on its apparent hybrid origin. He did feel that the bill was somewhat longer than might be expected for such a hybrid. Robert McLandress, after seeing black and white photos of the bird, thought that it was arguably a hybrid, or at least not a typical one, and that its apparent small size could have been accentuated by spending much time in "submissive" postures as would be typical of injured, sick, or "lone" geese. The Newport Bay goose did not appear injured or sick, was seen in very alert postures on several occasions, and migrated on schedule that spring.

Ross' and Snow geese are known to nest together in the same arctic areas and a number of hybrids between the species, including both white and blue morphs, have been reported. Hybrid specimens tend to be intermediate in most linear measurements as might well be expected (Trauger, Dzubin and Ryder, Auk 88:856-875, 1971; McLandress and McLandress op. cit.). One unsuccessful attempt was made to capture the Newport Bay goose and get the measurements which would have clarified the proposed hybrid origins of this bird.

Specimens of Ross' x Snow Goose hybrids were first reported only from the Central Flyway but are now known from both the Central and Pacific flyways. However, such birds are easily overlooked and may occur in both flyways more commonly than previously reported. Had the bird in question been part of even a small flock of Snow Geese it is doubtful that it would have attracted much attention; I feel it would have stood out rather obviously among a group of Ross' Geese. Such hybrids are one thing more for observers to be aware of and look for among the large wintering flocks of white geese.

CHARLES T. COLLINS, Department of Biology, California State University, Long Beach, California 90840.

Eurasian Dotterel (*Charadrius morinellus*), Point Reyes, Marin County, California, 9 September 1986

Photos by Richard Hallowell

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Cover photo by Ebbe Banstorp: Little Stint (*Calidris minuta*), Attu Island, Alaska, September 1983. Lawrence G. Balch discussed the identification of this bird in *Birding* 18:103-104, 1986.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (6 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $12 from the American Institute of Biological Sciences, 1401 Wilson Boulevard, Arlington, VA 22209.

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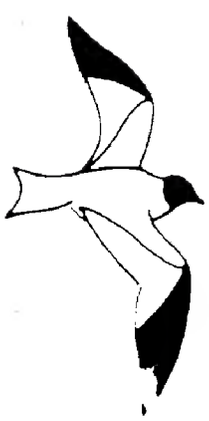

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WESTERN BIRDS

Volume 17, Number 3, 1986

HAVE ORNITHOLOGISTS OR BREEDING RED-BREASTED SAPSUCKERS EXTENDED THEIR RANGE IN COASTAL CALIFORNIA?

W. DAVID SHUFORD, Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, California 94970

Grinnell and Miller (1944) mapped the breeding range of Red-breasted Sapsucker (*Sphyrapicus ruber*) in coastal California as extending south in Mendocino County to just below the Big River on the west and to Mt. Sanhedrin on the east (Figure 1). The recent discovery of Red-breasted Sapsuckers breeding in coastal Marin County about 165 km south of this limit (Laymon and Shuford 1980, Shuford 1985) and the knowledge of a number of recent unpublished breeding records from northern Sonoma County (B.D. Parmeter pers. comm) prompted me to investigate the extent of this apparent range extension. I also examined the question of whether this was a true extension of the species' breeding range or just an artifact of more thorough coverage of a previously neglected area.

METHODS

To document the extent of the apparent range extension I thoroughly searched both the published literature and sources of unpublished records. I gave particular attention to the regional editors' notebooks of the Middle Pacific Coast region (northern California) of *American Birds* and the museum collections of the Museum of Vertebrate Zoology (MVZ), Berkeley, and the California Academy of Sciences, San Francisco. I also corresponded with all observers that I knew to have made recently more than casual investigations of the birdlife of southern Mendocino County, adjacent Lake County, and coastal Sonoma and Marin counties. Records that I considered to document the extension of the breeding range either (1) confirmed breeding, i.e., were of adults feeding nestlings or fledglings, or (2) were of adults in appropriate breeding habitat outside the period of 16 September through 21 April, which is the span of extreme dates of migrant/wintering birds in lowland California (*Bird Lore/Audubon Field Notes/American Birds* [Middle and Southern Pacific Coast regions] 1917-1985, Grinnell and

Wythe 1927, Grinnell and Miller 1944, Sibley 1952, regional editors' notebooks for the Middle Pacific Coast region of *American Birds* 1954-1985, Gaines 1974, Bolander and Parmeter 1978, McCaskie et al. 1979, Davis et al. 1980, DeSante and Ainley 1980, Webster et al. 1980, Garrett and Dunn 1981, Laymon 1981, Roberson 1985).

Evidence for assessing the thoroughness of prior field work in the area in question I collected by inspecting the number of records (primarily specimens) of other coniferous forest species plotted on the distribution maps in Grinnell and Miller (1944), by checking all pertinent references in that publication, and by thoroughly checking the hundreds of notebooks of the field workers from MVZ, which, along with those workers' specimen collections, were Grinnell and Miller's (1944) primary source of information for describing the distribution of the state's avifauna.

RESULTS

Recent records extend the known breeding range of Red-breasted Sapsucker in California south and east in the interior Coast Range of the southern Yolla Bolly region of the Mendocino National Forest as far as Lake County and continuously south along the coast to northern Sonoma County. Also, a small isolated population occurs in Marin County (Figure 1, Appendix 1).

All sources indicate that up to the time of the publication of Grinnell and Miller (1944) the area of the apparent range extension received only minimal ornithological investigation. Grinnell and Miller cite only three main references on Mendocino County's breeding birds (McGregor 1896, Stone 1904, Mailliard 1919), and these are all short accounts based on field work in limited areas over a short time span. Because Grinnell and Miller's work was based in large part on specimens and unpublished records these sources should shed the most light on the amount of investigation in the area of apparent range extension. Grinnell and Miller's distribution maps of other coniferous forest species, such as Pygmy Owl, Hairy Woodpecker, Steller's Jay, Chestnut-backed Chickadee, and Brown Creeper, show only from one to four localities per species in the coastal areas of southern Mendocino and northern Sonoma counties. The single record of Hairy Woodpecker, a species that breeds along the whole length of coastal northern California, is telling. Since this region is in the heart of the breeding range of this species, which they considered "common" or sometimes "abundant" (Grinnell and Miller 1944), it stands to reason that the single record indicates a dearth of field work rather than a dearth of Hairy Woodpeckers.

The notebooks of MVZ field workers indicate only one major collecting trip to southern Mendocino and northern Sonoma counties. A.C. Shelton, W.P. Taylor, and their co-workers made an extended collecting trip from the Point Reyes area of Marin County to the southern Yolla Bolly region of northwestern Mendocino County from 26 May to 24 August 1913 (unpubl. field notes in MVZ). They were in the area of the apparent range extension from 26 May to 17 July and made encampments for collecting 3 miles west of Inverness, Marin Co. (26 May to 9 June), at Freestone, Sonoma Co. (10 to 19 June), 7 miles west of Cazadero, Sonoma Co. (19 to 27 June), at the mouth

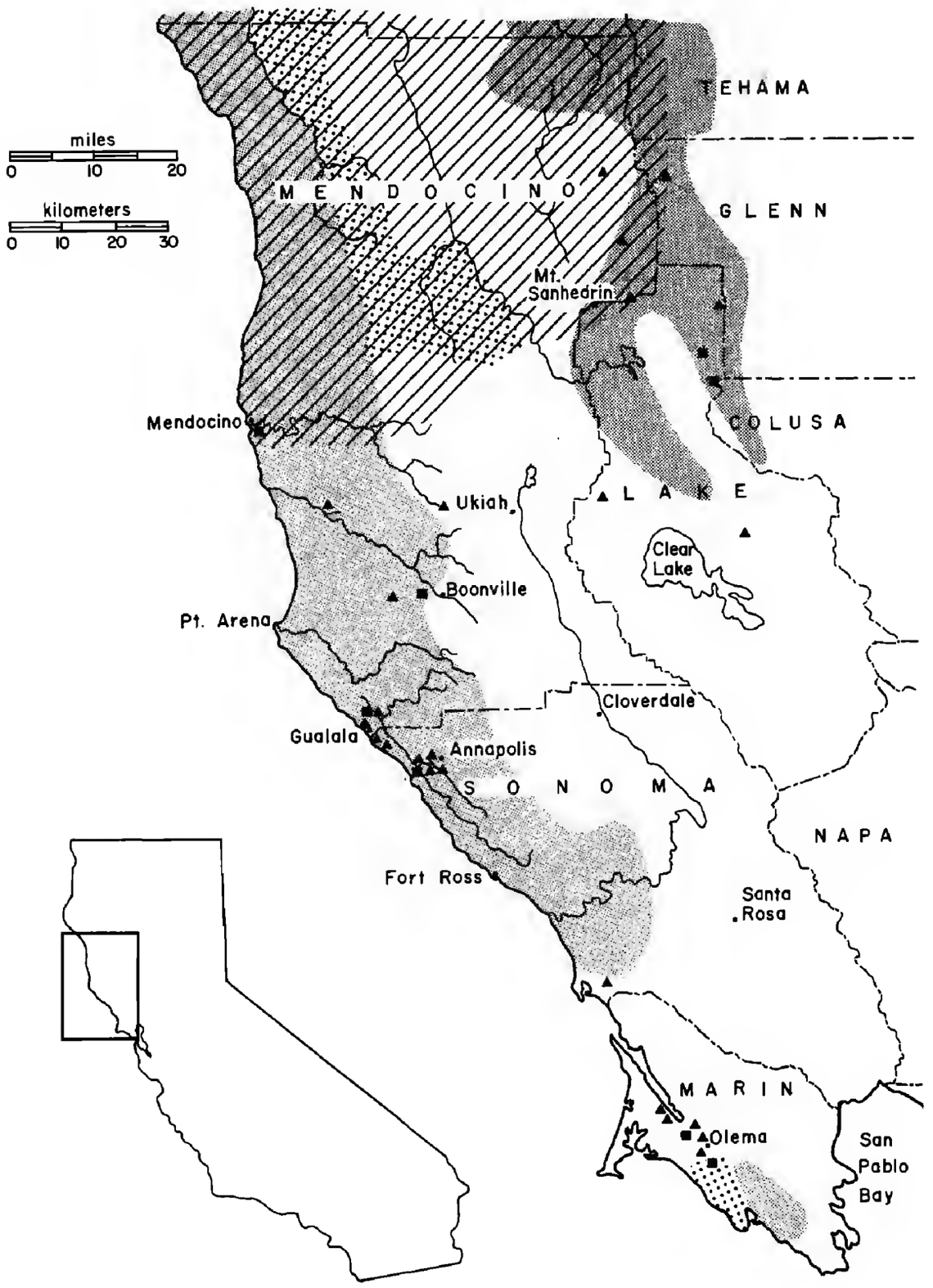

Figure 1. Southern extent of the breeding range of the Red-breasted Sapsucker in the Coast Range of California. Hatched northern area is the range reported by Grinnell and Miller (1944:235). Various shadings indicate the extent of coniferous and associated forests (Wieslander and Jensen 1945): light stippling along the coast represents coast redwood forest, widely spaced dots represent Douglas fir forest, and dense stippling towards the interior represents ponderosa pine forest. Recent records with confirmed evidence of breeding, i.e., adults feeding young, are indicated by squares, and sight or specimen records of birds in the breeding season are indicated by triangles. Individual records are listed in Appendix 1.

of the Gualala R., Sonoma Co. (28 June to 7 July), and at the town of Mendocino, Mendocino Co. (8 to 17 July). Apparently most of the records of all species plotted for this region in Grinnell and Miller's (1944) distribution maps were from the collections of this single expedition. Although the trip was of rather long duration, the limited number of sites sampled (because of dependence on rail and wagon transportation), the preoccupation with running trap lines to collect mammals, and the extensive time spent preparing bird and mammal specimens (Shelton, unpubl. field notes) together suggest that the expedition easily could have missed Red-breasted Sapsuckers, which are presently rare at the southern limit of their coastal range.

DISCUSSION

Grinnell and Miller (1944) was one of the first regional avifaunas in North America to include breeding range maps, for almost all species with more than one subspecies (Robbins 1982). These maps were based of necessity, because of the large area covered and small number of observers at that time, on records collected over a long time span. A quick inspection of any of their maps of widespread species shows that the records are clumped in areas given the greatest attention by collectors and that many areas have few if any records. The ranges shown by shading were inferred from the distribution of actual records. Such mapping by inference usually works well within the main range of a species because mappers generally know what habitats the species occurs in and how these habitats are distributed within the region in question. However, this technique often gives the false impression that a distribution is continuous when in fact it may be patchy, and the technique tends to give poor results on the edge of a species' range unless that area has been covered very thoroughly.

Red-breasted Sapsuckers in California breed primarily in moist conifer and mixed conifer forests or woodlands and bordering riparian associations dominated by aspens or alders (Grinnell and Miller 1944, Hemphill 1952, Shuford 1985). A map of the distribution of conifer forests in coastal northern California fits well with the current breeding distribution of Red-breasted Sapsuckers (Figure 1) and suggests that the former range (Grinnell and Miller 1944) was incompletely defined at its southern boundary because of insufficient field work in that area. Mapping on the basis of habitat distribution alone, however, has its pitfalls. Inaccuracies in habitat mapping would carry over to bird mapping. For example, Weislander and Jensen (1945) show a limited amount of Douglas fir forest in Marin County when in fact this forest extends northward to include the area of all the recent sapsucker breeding records in that county (Figure 1). I suspect the apparent lack of conifer forests in central Lake County in areas with breeding-season records of sapsuckers, according to Wieslander and Jensen (1945) (Figure 1), is due to inadequacies in vegetation mapping. Also, the classification of habitats for vegetation mapping may not be the most appropriate for mapping birds. Kuchler (1977), for example, mapped California's potential natural vegetation, i.e., what the vegetation would be under undisturbed conditions, of obviously limited applicability considering the current extent of disturbances to natural communities. In addition his mixed hardwood category includes

associations both with and without conifers, rendering it inadequate for mapping sapsucker breeding distribution since sapsuckers generally do not occupy stands of pure hardwoods. Furthermore, species' ranges sometimes stop abruptly even when "appropriate habitat" (to the human observers' eye at least) continues on over great distances. Clearly, accurate mapping of bird distribution must be based on field work that provides systematic and complete coverage of an area. Additionally, the field work should be conducted intensively over a relatively few years since range changes might go undetected if data were collected infrequently over a long time span.

Ornithological exploration of coastal California north of San Francisco Bay has been spotty until the last decade, and still remains so in some areas. Since Grinnell and Miller's (1944) work exploration of Mendocino's avifauna has not progressed measurably. Hemphill's (1952) work on the avifauna of the southern Yolla Bolly Mountains of northeastern Mendocino and parts of adjacent counties gives a detailed account of breeding avifauna of the higher elevations of that area. However, it is the only major work on any part of Mendocino's avifauna since 1944. Today most advances in our knowledge of the distribution of California's avifauna are made by the contributions of amateurs through the regional reports of *American Birds* or publication of regional annotated bird lists. Coverage of the state is of course spotty and in some ways our knowledge of bird distribution reflects the distribution of bird students as much as the distribution of the birds themselves. For example, in the last decade only one resident of Mendocino County has regularly contributed to the Middle Pacific Coast regional reports in *American Birds* (OJK in Appendix 1) and, although a number of observers contribute from Sonoma County, the remoter northern regions of that county have only recently begun to be explored. The cluster of recent breeding records of Red-breasted Sapsucker near the Mendocino/Sonoma county border (Figure 1) appears to be due solely to a few observers making repeated trips to that area in the last 10 years (Appendix 1 and pers. comm.). Although observers have covered Marin County reasonably well in the last 20 years, all sapsucker breeding records there have been obtained during or since the intensive field work carried out during the Marin County Breeding Bird Atlas project from 1976 to 1982 (Shuford in prep.).

The evidence does not completely exclude the possibility that the apparent range extension of Red-breasted Sapsuckers may be due all or in part to an actual expansion of sapsucker distribution since Grinnell and Miller's (1944) work. However, the limited prior exploration of coastal northern California argues more strongly that ornithologists have extended the range of their field work to document an area of previous occupation by sapsuckers. Range extensions of breeding sapsuckers in the higher mountains of San Diego County (Devillers 1970, Unitt 1981, McCaskie 1983, Unitt 1984) also appear to be a result of more thorough coverage of formerly poorly worked areas.

In a time of rapid human alteration of the environment it is more important than ever to document accurately range extensions and especially range contractions of birds. Presently it is frustrating to try to understand whether a species' range has contracted or expanded in historical times since in most areas we lack a systematically collected data base from which to evaluate

perceived changes. Determining the extent and intensity of historic exploration involves time-consuming and tedious perusal of old field notebooks and often leaves unanswered questions. Although recent increases in the number and quality of field observers and greatly improved transportation both suggest that field coverage has been greater in modern times, this is not always true and needs to be investigated in all cases of apparent distributional changes. In California, and elsewhere, it is only the glaring examples of drastic declines in species such as the California Condor, Yellow-billed Cuckoo, and Bell's Vireo that capture our attention, and then often too late. If field ornithologists in the West are to make local distributional studies useful for historical comparison and for conservation there is an urgent need for widespread systematic breeding bird atlas work similar to the intensive efforts already initiated in northeastern North America and other parts of the world (Laughlin et al. 1982).

ACKNOWLEDGMENTS

I gratefully acknowledge all the observers who shared unpublished field notes and especially Jack R. Arnold, Oliver J. Kolkman, Edward H. McClintock, and Benjamin D. Parmeter, all of whom furnished a number of sapsucker breeding records. Ned K. Johnson and Anne D. Jacobberger provided recent specimen records from the Museum of Vertebrate Zoology, Stephen F. Bailey confirmed the lack of recent specimen records from the California Academy of Sciences, Barbara Stein provided access to field notebooks at MVZ, and Kurt F. Campbell supplied unpublished records contributed to the files of the editors of the Middle Pacific Coast region of *American Birds*. Ned K. Johnson thoughtfully reviewed an earlier version of the manuscript. This is Contribution No. 339 of the Point Reyes Bird Observatory.

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APPENDIX 1

Breeding-season records of Red-breasted Sapsuckers in coastal northern California since the publication of Grinnell and Miller (1944). Observers or collectors cited are Jack R. Arnold, Terry Babineaux, Karen Cartier, Doug Ellis, Ben Glading, Roger Harris, D.V. Hemphill, Emmy Hill, Ned K. Johnson, Oliver J. Kolkman, Edward H. McClintock, Benjamin D. Parmeter, John Parmeter, Mary Ann Sadler, Rich Stallcup, Robert M. Stewart, and Meryl Sundove. MVZ = Museum of Vertebrate Zoology, Berkeley.

Glenn County

19 Jul 1949 Plaskett Meadows, near Black Butte, 6000′, ad. male (MVZ 149682, DVH)
7 Jun 1951 Sheetiron Mtn., summit 6400′, ad. male (MVZ 149683, DVH)

Lake County

16 & 19 Jun 1950 Snow Mtn., Milk Ranch 6400′, ad. male and female (MVZ 149679 and 149680, DVH)
24 Jun 1950 Snow Mtn., 6400′, "feeding of young" (Hemphill 1952)
14 Jun 1970 & 21 May 1971 Blue Lakes (EHM)
12 Jul 1970 near Evans Peak, approx. 4000′, "evidently young out of the nest" (EHM)
9-11 Jun 1973 Crockett Peak, 3900-4700′, 5 birds including pair collected at nest (MVZ 162461-162466, NKJ)
1 Jul 1973 Lake Pillsbury (Remsen and Gaines 1973)

Mendocino County

20 Jul 1950 Bald Mtn. 2 mi SE, Sand Creek, imm. (MVZ 149677, DVH)
13 Jun 1951 Hull Mtn. Lookout, 1 mi NW, 6400′, ad. (MVZ 149676, DVH)
19 Jul 1951 Etsel Ridge, Port Camp, 5600′, ad. (MVZ 149678, DVH)
28 Apr 1974 P. M. Dimmick Wayside Camp, Navarro River, 3 birds (OJK)
2 May 1974 N. Fork Gualala River, 2 mi NE of the town of Gualala (OJK)
6 Jun 1980 near mouth of Gualala River, one bird seen entering a hole (BDP)
23 Jun 1975 3 mi W of Boonville, adult feeding young in next (OJK)
23 & 24 Jun 1975 north side of Cold Springs Lookout, 7 mi W of Boonville, adult feeding young in nest (OJK)
8 Oct 1977 near town of Mendocino, ad. feeding fledgling (Erickson and Morlan 1978)
9 Jun 1980 Low Gap Rd., 8 mi W of Ukiah (OJK)
13 Jun 1981 Gualala River, about 2 mi inland, pair with young (LeValley and Evens 1981, erroneously reported as Sonoma Co.)

Sonoma County

20 Jul 1972 "near" Bodega Bay (DeSante and Remsen 1972)
"July" 1977 Gualala Point County Park, adults feeding young in nest hole (TB fide BDP); 6 Jun 1980 (BDP)
5 May 1978 Sea Ranch just S of Gualala R., two pairs in courtship and territorial display (BDP)
Cluster of sightings from the turnoff onto Annapolis Rd. from Highway 1 at Sea Ranch east to the vicinity of the town of Annapolis: 6 Jun 1976 (BDP); 30 Jun 1976, pair (JRA); 11 Jul & 13 Aug 1976 (JRA); 12 Jul 1977, "carrying food to young" (JRA); 20 May 1978, 2 birds calling (BDP); 3 Jun 1979 (BDP); 8 Jun 1980 (BDP); 11 Jun 1981, nest with young (JRA); 5 & 6 Jun 1982, 2 pairs, one bird excavating a hole

(BDP, DE); 26 Jun 1982, one pair (KVV, KC, JP); 26 & 27 May 1984 (BDP); 8 Jun 1985, pair in and out of hole in alder (BDP); 8 Jun 1986, 3 birds at two sites (BDP)

Marin County

27 Apr 1977 Olema, two birds (RMS)
22 Jun 1980 near Bear Valley Hdqtrs., Point Reyes Natl. Seashore (P.R.N.S.), pair carrying food to nest hole; young destroyed by Acorn Woodpeckers (Laymon and Shuford 1980, Shuford 1985)
9 May 1982 Inverness Park (Evens and LeValley 1982)
23 May 1982 Papermill Creek, Pt. Reyes Station (BG; Evens and LeValley 1982)
18 Oct 1982 Five Brooks, P.R.N.S., adult feeding full-sized fledgling (EH, MAS)
11 May 1983 Rift Trail, P.R.N.S. between Five Brooks and Bear Valley, adult drilling "nest hole" (MS, RH)
22 Apr 1985 Inverness "investigating hole in alder" (RS)

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Red-breasted Sapsucker

Sketch by Tim Manolis

LOCAL WINTER MOVEMENTS OF FOUR RAPTOR SPECIES IN CENTRAL COLORADO

THOMAS A. GATZ, Denver Wildlife Research Center, U.S. Fish and Wildlife Service, Denver, Colorado 80225 (present address: Environmental Division, U.S. Bureau of Reclamation, P.O. Box 9980, Phoenix, Arizona 85068)

PAUL L. HEGDAL, Denver Wildlife Research Center, U.S. Fish and Wildlife Service, Denver, Colorado 80225

Although most North American raptors are migratory (Bent 1937, 1938), considerably less emphasis has been placed on studying wintering habitat than breeding habitat. Newton (1979) noted that relatively few raptor studies have been conducted in winter. Wilkinson and Debban (1980) stated that little is known about wintering habitat preferences for any raptor species (but, see Southern 1963, Weller 1964, Schnell 1968, Edwards 1969, Koplin 1973, Page and Whitacre 1975, Parker and Campbell 1984, Fisher et al. 1984). Consequently, it is difficult to predict the effects of wintering habitat alterations on raptor populations. One of the most detailed winter studies of raptors (Craighead and Craighead 1956) based its movement estimates on observations of unmarked birds in southern Michigan. The study by Enderson (1964) of Prairie Falcon (*Falco mexicanus*) movements in the central Rocky Mountain region was based on observations of marked birds. However, without telemetry equipment, the locations of unobserved birds could not be determined.

While field testing methods of attaching radio transmitters to raptors, we collected movement data for three Red-tailed Hawks (*Buteo jamaicensis*), one Rough-legged Hawk (*Buteo lagopus*), one Prairie Falcon and three Great Horned Owls (*Bubo virginianus*) for various periods of time (1 day to 4 months) between 1 December 1974 and 10 April 1975 in central Colorado.

STUDY AREA AND METHODS

The study was conducted in a 186 km^2 area of south Sedalia, Douglas County, in central Colorado. The study area was on private land adjacent to the Rampart range foothills east of Pike National Forest. West Plum Creek and its major tributaries are the primary drainage courses, and the habitat within 0.4 km of these drainages constitutes 29% of the study area. The elevation ranges from 1739 m in the drainage bottoms to 2280 m on the buttes.

Habitat in the area. primarily used for cattle production, comprises short grass pasture and alfalfa with scattered stands of natural and planted tree groves. Dominant native trees include Ponderosa Pine (*Pinus ponderosa*) and oak (*Quercus* spp.) on the uplands and Plains Cottonwood (*Populus sargentii*) and willow (*Salix* spp.) in the drainages.

We trapped all raptors near roads which paralleled major drainages in the area. The Prairie Falcon, Red-tailed Hawks and Rough-legged Hawk were

captured by means of bal-chatri traps (Berger and Hammerstrom 1962, Berger and Mueller 1959); the Great Horned Owls were captured in Swedish goshawk traps (Meng 1971) and with bal-chatri traps. The raptors were held overnight and blood samples were taken from the hawks and falcon. We used 164 MHz, 15 to 25 g transmitters which were attached with nylon cord "back-pack" harnesses to two Red-tailed Hawks and to two Great Horned Owls. The remaining birds were radio-equipped with experimental tail mounts on the two central rectices. Radio tracking was done primarily from vehicles equipped with roof-mounted dual yagi antennas (Hegdal and Gatz 1979). Yagi antennas were used for aerial tracking. Hand-held loop and yagi antennas were used for "walking-out" radio-equipped birds. Model LA 12 receivers (built by AVM Instrument Co., Champaign, IL)[1] were used for all radio-tracking.

Raptor locations were determined about twice each week by triangulation. Each bird was located visually approximately once each week to observe the radio attachment. Since the main objective of this study was to field test radio attachment techniques, primary consideration was not given to continuous or daily monitoring of raptor movements. The tracking of radio-equipped birds was fairly regular from 4 December 1974 to 19 February 1975. Tracking was discontinued in March and April except for the periods of 6 to 10 March and 5 to 12 April when additional movement data were collected. No active radio transmitters were located in the study area on 13 August 1975. We plotted raptor locations on 1:24000 scale USGS quadrangle maps. The convex polygon method (Southwood 1966, Jennrich and Turner 1969) was used to calculate the area used by the raptors. Although this method often includes areas of non-use and gives no weight to relative densities of locations in the polygon, it is a consistent method and it provides information comparable to other movement data often calculated with this technique (Jennrich and Turner 1969). We follow Craighead and Craighead (1956) in defining a winter raptor range as "a rather limited area of land over which a raptor moves or hunts during a given period." It is generally undefended, thus it differs from a territory.

RESULTS AND DISCUSSION

Red-tailed Hawks

Of the three Red-tailed Hawks radioed, number 3 flew west and was not located again after it was released on 23 December 1974 (Table 1). Red-tailed Hawk number 1 was monitored from 4 to 18 December 1974, and had moved 6.3 km south of its capture site when last located. Red-tailed Hawk number 2 was monitored from 5 December until 11 December 1974 when no signal was received in the study area. An aerial search in late February 1975 over the study area and 290 km south to near the Colorado-New Mexico border failed to locate the bird. However, it was located again 20 March 1975 in the study area 0.4 km from its last December location. It was building

[1]Use of brand names does not imply endorsement by the Federal Government.

Table 1. Raptor movement data summary, Douglas Co., Colorado, 12 December 1974 to 10 April 1975.

SPECIES	NUMBER	RANGE (km²)	MAX. DISTANCE MOVED (km)	% LOCATIONS 0.4 km OF CREEK	NUMBER OF LOCATIONS	NUMBER DAYS MONITORED	DATES MONITORED
Red-tailed Hawk	1	18.0[1]	7.1	100%	9	15	4-18 Dec 1974
Red-tailed Hawk	2	2.2	2.6	100%	10	22	5-11 Dec 1974 20 Mar to 10 April 1975
Red-tailed Hawk	3	—	—	100%	1	1	23 Dec 1974
Rough-legged Hawk	—	8.0	8.8	95%	20	65	17 Dec 1974 to 19 Feb 1975
Prairie Falcon	—	27.6	10.0	100%	35	114	12 Dec 1974 to 4 April 1975
Great Horned Owl	1	0.4	1.1	86%	14	46	27 Dec 1974 to 10 Feb 1975
Great Horned Owl	2	0.9	1.1	97%	29	108	24 Dec 1974 to 10 April 1975
Great Horned Owl	3	0.2	0.8	100%	9	57	13 Feb-10 April 1975

[1]Probably not a true winter range. This Red-tailed Hawk appeared to be a transient bird moving through the study area.

a nest with another Red-tailed Hawk in a large cottonwood 1.2 km south of its capture location on 10 April 1975, when monitoring was discontinued.

Bailey and Niedrach (1965) stated that, in contrast to 20 to 30 years ago, when prairie dogs (*Cynomys* spp.) and other small mammals were abundant, most breeding Red-tailed Hawks in Colorado now leave for the winter. They show egg laying dates for this species in early May in Colorado. This is consistent with our data. Two of our radio-equipped birds were apparently transient in the study area in December. Red-tailed Hawk number 2, a breeding bird in the study area, left the area in mid-December for 3 months, returned by mid-March, and initiated nest-building in April.

Based on our limited data, the winter range of the resident Red-tailed Hawk was 2.2 km^2. In comparison, Craighead and Craighead (1956) estimated Red-tailed Hawk winter ranges of 0.75 to 2.98 km^2 for individual birds and 3.80 to 10.0 km^2 for pairs in southern Michigan. The mean size of winter home ranges for Red-tailed Hawks of both sexes in a southwestern Wisconsin study was 1.65 km^2 (Peterson 1979). Fitch et al. (1946) found that Red-tailed Hawks have circular or oval home ranges which varied spatially according to the number and distribution of perch trees, food supply, territorial pressures and physiographic features of the terrain. Peterson (1979) showed that winter home range boundaries of radio-equipped Red-tailed Hawks in Wisconsin frequently appeared to follow public roads (which are modified by physiographic features) and woodlot edges containing selected trees used as hunting perches. Similar selection for a physiographic feature may have been occurring in our study area. All of the Red-tailed Hawks locations were within 0.4 km of drainage courses, most of which were paralleled by roads, but habitat within 0.4 km of drainages constituted only 29% of our study area.

Rough-legged Hawk

We radio-tracked a dark-phase Rough-legged Hawk from 17 December 1974 to 21 January 1975, and located it visually from 6 to 19 February 1975 after the radio transmitter came off. We identified it by its missing tail feathers which came off with the transmitter. Our last sighting of this bird in February is consistent with Bailey and Niedrach's (1965) observation that the northward migration of Rough-legged Hawks out of Colorado starts in late February.

The total range of this bird (8.0 km^2) may be exaggerated by including two locations that could represent wandering from its usual range. Eighty-nine percent of its locations were within a 1.0 km^2 area. This small range is in contrast to the 10 to 15 km^2 winter range estimated to be used by this species in southern Michigan (Craighead and Craighead 1956). Two of the Rough-legged Hawks observed in the Michigan study did have winter ranges more comparable to our data (1.8 to 4.4 km^2). Except for these two individuals, accurate range data were not obtained in the Michigan study for other individuals because of the difficulty in distinguishing individual birds (Craighead and Craighead 1956). Citing increases in daily ranges of hawks from fall to spring as rodent populations decreased, Craighead and Craighead (1956)

concluded that small ranges of raptors were always correlated with either very high or unusually vulnerable local rodent populations.

The majority (95%) of our Rough-legged Hawk radio-locations were within 0.4 km of a drainage course.

Prairie Falcon

A male Prairie Falcon had the largest total winter range of any raptor monitored in this study (27.6 km²). However, the range may be exaggerated by including large areas of probable non-use between its diurnal range and its roosting sites up to 10 km to the south. Ninety percent of its locations were within a 9.3 km² area and all locations were within 0.4 km of major drainages. Most (91%) of the locations were taken between 1000 and 1600. Two locations in the late afternoon were 3.8 km south of the usual diurnal range and two locations after dark were 10 km south of the diurnal range.

From 11 December 1974 to 14 February 1975 most (83%) of its daytime locations were within a 0.5 km² area where it frequently was observed perched in dead trees or on haystacks. From 18 February to 20 March it expanded its diurnal range 2.5 km to the south, increasing its range to 1.9 km². Including diurnal movements away from this 1.9 km², a total of 9.3 km² were used by the falcon during the daytime. Only by including the distant roost sites does the total winter range expand to 27.6 km². On 4 April 1975 the falcon's radio transmitter and feathers were found near a dirt road, indicating that the bird was dead. This last location was 6.5 km south of its capture site. Enderson (1964) used the length of a line between the two most distant points of observation to measure marked Prairie Falcon winter ranges in Colorado and Wyoming. Using this method he found the average "range" to be 5.5 km, with a maximum of 19.4 km. Female birds had greater average ranges (11.5 km) compared to males (6.1 km). The male bird in our study had a maximum range of 10 km between its two most distant locations.

Great Horned Owls

The three Great Horned Owls we monitored frequently changed roost locations within their respective ranges of 0.4 km², 0.9 km² and 0.2 km² (mean area of 0.5 km²). The actual areas used by these owls are probably under-estimated because most (96%) of the locations were taken during daytime roosting periods and do not adequately reflect the owls' nocturnal movements. Great Horned Owl number 1 removed its radio harness on 10 February 1975. Great Horned Owl number 2 was last located on a nest in a conifer in a ranch yard on 20 March 1975.

These data are in agreement with Craighead and Craighead's (1956) conclusions (based on observations of unmarked birds in Michigan) that Great Horned Owls maintain relatively small home ranges where they nest as well as winter and that winter ranges seldom exceed 1.3 km². Similarly, Peterson (1979) found a mean January home range of 1.48 km² for Great Horned Owls of both sexes in southeastern Wisconsin. He also noted that owls unsuccessful in breeding had a similar sized home range from January through

March, while successful males increased their home ranges between 26 and 64% during the same period.

Ninety-four percent of the Great Horned Owl locations in our study were within 0.4 km of a drainage course.

SUMMARY

We collected movement data for eight raptors of four species with the use of radio telemetry in Douglas County, Colorado. We monitored three Red-tailed Hawks, one Rough-legged Hawk, one Prairie Falcon and three Great Horned Owls for various periods of time (1 day to 4 months) from 1 December 1974 to 10 April 1975. Two of the three Red-tailed Hawks were apparently transient birds. One remained in the study area only 15 days and a second bird was never located in the area after its release on 23 December. The third Red-tailed Hawk left the study area 11 December 1974 and returned to the area by 20 March 1975 where it remained to nest. It confined its local movements to a 2.2 km^2 area. Eighty-nine percent of the Rough-legged Hawk locations were confined to a 1.0 km^2 area. The Prairie Falcon moved up to 10 km between its day use area of 9.3 km^2 and its roost sites. The daytime roost locations of the three Great Horned Owls were each limited to a mean area of 0.5 km^2.

Our data, based on radio-equipped raptors, tend to support Craighead and Craighead's (1956) conclusions, based on observations of unmarked birds, that "definite and limited winter ranges are established by raptors and that these populations are spatially fixed and do not wander indiscriminately." The relatively small main-use areas of the Rough-legged Hawk and the Prairie Falcon may indicate that high prey populations were available to these species in the winter of 1974-75 in this area (Craighead and Craighead 1956, Newton 1979). The majority (97%) of all raptor locations in this study were within 0.4 km of drainage courses though this habitat made up only 29% of the study area. This observation suggests that the habitat associated with these riparian areas is important to wintering raptors. Glinski and Ohmart (unpublished data) surmise that in Arizona riparian areas may be essential to raptors as wintering refuges. Anderson and Ohmart (1977) have reported that wintering passerines exhibit a higher degree of habitat specialization than permanent residents. This factor also may be operating in riparian habitats for some wintering raptor species. Although no investigations were undertaken to test this hypothesis in our study area, perhaps the greater number of suitable perch sites and the greater or more vulnerable prey base available in the drainage bottoms account for almost all of the raptor use occurring in this habitat.

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SEASONAL ANALYSIS OF A SOUTHWESTERN NEW MEXICO RIPARIAN BIRD COMMUNITY

WILLIAM H. BALTOSSER, Department of Biology, New Mexico State University, Las Cruces, New Mexico 88003 (present address: 5022 La Cienega NW, Albuquerque, New Mexico 87107)

The lower Gila River Valley of southwestern New Mexico has some of the finest riparian habitat and the most diverse association of wildlife to be found in the entire lower Colorado River drainage (Zimmerman 1970, 1975; Hubbard 1971; Johnson et al. 1974). Over two-thirds of New Mexico's total of 449 species of birds are known from the valley (Zimmerman 1975, Hubbard 1977). In addition, the New Mexico portion of the Gila River Valley contains the greatest diversity of raptors in the lower Colorado River drainage and the largest number of endangered, threatened and peripheral bird species (Johnson et al. 1974). The present study was conducted to examine and quantify seasonal changes in avian composition, density and diversity along the Gila River. Comparisons of the present study with similar studies indicate numerous similarities, but the results reaffirm the richness of the avifauna in the New Mexico portion of the Gila River Valley.

METHODS

I established twenty contiguous study plots along the Gila River on the northeast side of the U.S. Highway 180 bridge (T15S, R17W, Sec. 33 & T16S, R17W, Sec. 4) in Grant County, New Mexico. Two types of habitat were recognized and subdivided accordingly: sandy riverbottom (5.30 ha) and adjacent woodlands (9.15 ha) composed of Fremont's Cottonwood (*Populus fremontii*), Box-elder (*Acer negundo*), and Goodding's Willow (*Salix gooddingii*) stands (see Figures 1 & 2). Twenty-three weekly surveys were made between 4 January and 30 June 1975. Surveys were conducted according to methods outlined under the heading "Winter Bird-Population Study" in *Audubon Field Notes* (Anonymous 1950). The spot-map method (Williams 1936, Kendeigh 1944) was used in conjunction with the former methods to estimate breeding bird populations during May and June. Densities and size classes of trees in the wooded stands were measured during winter months by direct counts and checked against low-altitude aerial photographs. No effort was made to measure vegetation in the riverbottom because there was virtually no terrestrial and very little aquatic vegetation.

Species diversity was calculated using the Shannon-Weaver (1949) information function,

$$H^1 = -\sum_{i=1}^{S} p_i \ln p_i$$

where S is the number of species, and p_i is the proportion of the total number of individuals consisting of the ith species. This measure (H^1) has two separate components, species richness (S) and the equitability or evenness of species abundance (Lloyd and Ghelardi 1964, Tramer 1969). Species

richness is simply the number of species in the sample. To measure the evenness of abundance, I used the index $J^1 = H^1/H^1$ max in which H^1 max is ln S. This index represents the ratio of the observed diversity to the maximum diversity possible for the same number of species. It has a maximum value of one when all species are equally abundant.

AREA DESCRIPTION

The study area is at an elevation of 1370 m and was the largest single stand of riparian woodland in the immediate vicinity. Surrounding areas included abandoned farm land to the west, farmed land to the east, and land similar to that of the study area to the north and south. Box-elder, cottonwood and willow trees within the study area produced a combined canopy cover of approximately 80%, excluding the riverbottom and two small open areas. Box-elders attained heights up to 15 m, average densities of 41 trees per ha (excluding saplings, which averaged 102 per ha), and DBH (diameter at breast height) values from 26 to 64 cm (based on pooled averages from each of the 12 wooded study plots). Fremont's Cottonwoods reached heights of 27 m, average densities of 14 trees per ha (virtually no saplings), and DBH values from 36 to 128 cm. Goodding's Willow stands attained heights of 12 m, average densities of 11 trees per ha, and DBH values from 29 to 47 cm. Cottonwoods and willows were well dispersed throughout the area, as were Box-elders, but the latter tended to be somewhat more concentrated in

Figure 1. Panoramic view of a portion of the Gila River Valley study area looking south; area of study includes both the open sandy riverbottom in the foreground and densely wooded areas in the background.

southern portions of the study area. Small stands of Emory Baccharis (*Baccharis emoryi*) in southern portions of the study area were replaced in the more northern plots by Seepwillow (*Baccharis glutinosa*). The dense understory was also composed of fallen limbs, snags and the following plants: Chuchupate (*Ligusticum porteri*), Buffaloweed (*Ambrosia trifida*), Sweet Four-O'Clock (*Mirabilis longiflora*), Skunk-bush (*Rhus trilobata*), and Western Virginia-Creeper (*Parthenocissus inserta*).

RESULTS

Species Composition and Seasonal Occurrence. Each of the 112 bird species observed during the study was grouped into one of four categories based on its seasonal occurrence and breeding status (Table 1). The four categories are: (1) winter birds (30 species), those present during January and February but not remaining to breed; (2) migrants (29 species), those present during months other than January and February but not remaining to breed; (3) summer residents (24 species), those not members of the former categories but nesting or using the area extensively during May and June; and (4) permanent residents (29 species), birds generally present throughout the 6-month period.

Of the 30 winter species, only the Red-tailed Hawk, Brown Creeper, Ruby-crowned Kinglet, Yellow-rumped Warbler, Rufous-sided Towhee, Song Sparrow, Lincoln's Sparrow, White-crowned Sparrow and Dark-eyed Junco were consistently present. Others such as Green-winged Teal, Northern Pintail, Northern Harrier, Golden Eagle, Prairie Falcon, Bushtit,

Figure 2. Typical view of Gila River Valley wooded areas showing Goodding's Willows in the foreground with Box-elders and Fremont's Cottonwoods in the background.

Western Bluebird and Loggerhead Shrike were recorded within the area only once, although most were present in nearby areas throughout much of the period. The one Ring-billed Gull was merely a vagrant to the study area; the species is irregular in the lower Gila River Valley. The single Hermit Thrush observed on the first of February may have wintered in nearby habitats.

Very few of the 29 migrant species remained for an extended period. Those lingering included Wilson's Warbler, House Wren and Chipping Sparrow. Most of the remaining species were simply present one week and were gone by the next. Some, such as Broad-tailed Hummingbird, Painted Redstart, Western Tanager and Green-tailed Towhee, were common in other, generally more elevated, areas of the lower Gila River Valley during late spring and summer. Say's Phoebe and Chihuahuan Raven were relatively common in open habitats adjacent to the study area but rarely ventured into the area itself. The Gray Flycatcher is a regular migrant in this area of New Mexico, but it is more typical of evergreen woodlands (John Hubbard in litt.). The Winter Wren and American Redstart are uncommon in the area but nonetheless may occur somewhat regularly in very low numbers.

Most of the 24 summer species were continuously present after their initial arrival and all but three nested within the study area. Turkey Vultures and Cooper's Hawks occasionally entered the study area but I obtained no evidence of nesting. The single American Crow observed in late May and early June was probably a vagrant, since the species was uncommon throughout the lower Gila River Valley prior to 1975. It has, however, become more common in the Valley during the past decade (Dale Zimmerman in litt.). The extended presence of Cliff Swallows resulted from the establishment of a nesting colony under the U.S. Highway 180 bridge, which formed the southern boundary of the study.

Only six of the 29 permanent residents were observed on each of the 23 weekly surveys. All but two, however, were observed on 50% or more of the surveys. Despite the fact that Brown Towhees and Western Meadowlarks only occasionally entered the study area, I considered them residents because they were consistently seen and/or heard throughout the study in adjacent areas. The Great Blue Heron, Mallard, Common Merganser, Spotted Sandpiper, Ladder-backed Woodpecker, Common Raven, Brown Towhee and Western Meadowlark did not nest within the confines of the study area, but all presumably nested in adjacent areas. Common Ravens are, however, known to have nested within the area during other years (Dale Zimmerman in litt.). The remaining 21 permanent residents are known to have nested within the study area during the course of my study (Table 1).

Seasonal Variability. Variability in avian density, species richness, equitability, and bird species diversity in each habitat type are shown in Table 2. Avian density within riverbottom areas showed considerable monthly variation; there was less variation within the wooded areas. Seasonal density patterns within both riverbottom and wooded habitats showed expected seasonal trends; i.e., numbers were lowest during winter, highest during spring migration, and of intermediate magnitude during the breeding season. The number of species present throughout the entire 6-month period in riverbottom areas remained relatively constant, whereas that for wooded areas showed expected seasonal fluctuations.

Table 1. Status, period and frequency of occurrence, and monthly density of birds censused in the lower Gila River Valley, southwestern New Mexico. See text for definition of winter birds (W), migrants (M), summer residents (S) and permanent residents (P). An asterisk (*) indicates species that nested in the study area.

Species	Status	First and last date of occurrence	Frequency of occurrence (%)	Monthly density (avg. no. individuals/40 ha) Jan	Feb	Mar	Apr	May	Jun
Great Blue Heron *Ardea herodias*	P	4 Jan-15 Jun	56.5	11	10	15	8	8	8
Green-winged Teal *Anas crecca*	W	15 Feb-15 Feb	4.3		38				
Mallard *Anas platyrhynchos*	P	4 Jan-1 Jun	78.3	79	38	70	47	15	8
Northern Pintail *Anas acuta*	W	15 Feb-15 Feb	4.3		15				
Cinnamon Teal *Anas cyanoptera*	M	10 Mar-10 Mar	4.3			15			
Common Merganser *Mergus merganser*	P	18 Jan-1 Jun	56.5	23	17	28	20		8
Turkey Vulture *Cathartes aura*	S	22 Mar-30 Jun	39.1			4	9	7	4
Bald Eagle *Haliaeetus leucocephalus*	W	11 Jan-18 Jan	8.7	4					
Northern Harrier *Circus cyaneus*	W	15 Feb-15 Feb	4.3		4				
Sharp-shinned Hawk *Accipiter striatus*	W	25 Jan-29 Mar	8.7	4		4			
Cooper's Hawk *Accipiter cooperii*	S	26 Apr-1 Jun	8.7				4		9
Common Black-Hawk *Buteogallus anthracinus*	S*	10 Mar-30 Jun	65.2			9	9	9	9

Table 1 (Cont.)

Species	Status	First and last date of occurrence	Frequency of occurrence (%)	Monthly density (avg. no. individuals/40 ha) Jan	Feb	Mar	Apr	May	Jun
Red-tailed Hawk *Buteo jamaicensis*	W	4 Jan-26 Apr	43.5	6	4	4	4		
Golden Eagle *Aquila chrysaetos*	W	1 Feb-1 Feb	4.3		4				
American Kestrel *Falco sparverius*	P*	10 Feb-30 Jun	69.6		4	8	10	26	18
Prairie Falcon *Falco mexicanus*	W	25 Jan-25 Jan	4.3	4					
Ring-necked Pheasant *Phasianus colchicus*	P*	4 Jan-24 Jun	56.5	4	4	9	18	7	22
Gambel's Quail *Callipepla gambelii*	P*	25 Jan-30 Jun	56.5	131		35	18	18	18
Sandhill Crane *Grus canadensis*	W	18 Jan-10 Mar	13.0	13	105	26			
Killdeer *Charadrius vociferus*	P*	4 Jan-30 Jun	95.7	47	17	15	13	10	15
Solitary Sandpiper *Tringa solitaria*	M	3 May-3 May	4.3					8	
Spotted Sandpiper *Actitis macularia*	P	11 Jan-3 May	56.5	8	8	9	10	15	
Least Sandpiper Calidris minutilla	W	4 Jan-20 Apr	13.0	8			8		
Common Snipe *Gallinago gallinago*	W	4 Jan-5 Apr	17.4	50			8		
Ring-billed Gull Larus delawarensis	W	22 Feb-22 Feb	4.3		8				

White-winged Dove	M	12 May-12May	4.3					4	
Zenaida asiatica									
Mourning Dove	P*	4 Jan-30 Jun	100.0	59	89	48	73	109	93
Zenaida macroura									
Yellow-billed Cuckoo	S*	1 Jun-15 Jun	8.7						11
Coccyzus americanus									
Great Horned Owl	P*	10 Feb-30 Jun	56.5		7	4	4	13	16
Bubo virginianus									
White-throated Swift	M	22 Mar-22 Mar	4.3			45			
Aeronautes saxatalis									
Black-chinned Hummingbird	S*	12 Apr-30 Jun	39.1				7	18	18
Archilochus alexandri									
Broad-tailed Hummingbird	M	12 Apr-26 Apr	8.7				9		
Selasphorus platycercus									
Belted Kingfisher	P*	4 Jan-30 Jun	52.2	13	8	11	13	15	15
Ceryle alcyon									
Acorn Woodpecker	P*	10 Feb-30 Jun	78.3		7	7	8	9	9
Melanerpes formicivorus									
Gila Woodpecker	P*	11 Jan-30 Jun	65.2	9	4	9	7	18	18
Melanerpes uropygialis									
Red-naped Sapsucker	W	4 Jan-22 Mar	17.4	4	4	4			
Sphyrapicus nuchalis									
Ladder-backed Woodpecker	P	4 Jan-3 May	69.6	11	7	8	7	9	
Picoides scalaris									
Hairy Woodpecker	P*	4 Jan-30 Jun	87.0	7	7	7	6	9	9
Picoides villosus									
Northern Flicker	P*	4 Jan-30 Jun	100.0	11	15	16	12	26	26
Colaptes auratus									
Western Wood-Pewee	S*	3 May-30 Jun	30.4					39	26
Contopus sordidulus									
Gray Flycatcher	M	26 Apr-12 May	13.0				4	13	
Empidonax wrightii									

Table 1 (Cont.)

Species	Status	First and last date of occurrence	Frequency of occurrence (%)	Monthly density (avg. no. individuals/40 ha) Jan	Feb	Mar	Apr	May	Jun
Western Flycatcher *Empidonax difficilis*	M	12 May-23 May	8.7					7	
Black Phoebe *Sayornis nigricans*	P*	4 Jan-30 Jun	95.7	15	13	15	21	45	45
Eastern Phoebe *Sayornis phoebe*	W	18 Jan-25 Jan	8.7	4					
Say's Phoebe *Sayornis saya*	M	12 Apr-12 Apr	4.3				4		
Vermilion Flycatcher *Pyrocephalus rubinus*	S*	15 Mar-30 Jun	34.8			7	9	9	9
Ash-throated Flycatcher *Myiarchus cinerascens*	S*	26 Apr-30 Jun	34.8				9	9	9
Cassin's Kingbird *Tyrannus vociferans*	S*	3 May-30 Jun	30.4					18	18
Western Kingbird *Tyrannus verticalis*	S*	20 Apr-15 Jun	17.4				9	18	9
Violet-green Swallow *Tachycineta thalassina*	M	26 Apr-23 May	8.7				377	91	
Northern Rough-winged Swallow *Stelgidopteryx serripennis*	S*	10 Mar-24 Jun	43.5			15	60	60	60
Cliff Swallow *Hirundo pyrrhonota*	S*	12 Apr-30 Jun	43.5				359	755	377
American Crow *Corvus brachyrhynchos*	S	12 May-1 Jun	13.0					4	4
Chihuahuan Raven *Corvus cryptoleucus*	M	12 Apr-12 Apr	4.3				9		

Common Raven *Corvus corax*	P	18 Jan-23 May	65.2	9	7	15	12	26	
Bridled Titmouse *Parus wollweberi*	P*	4 Jan-1 Jun	87.0	40	35	38	23	44	44
Bushtit *Psaltriparus minimus*	W	18 Jan-18 Jan	4.3	87					
White-breasted Nuthatch *Sitta carolinensis*	P*	4 Jan-30 Jun	100.0	26	19	10	16	44	44
Brown Creeper *Certhia americana*	W	4 Jan-29 Mar	34.8	7	18	8			
Bewick's Wren *Thryomanes bewickii*	P*	4 Jan-30 Jun	100.0	63	37	45	34	61	87
House Wren *Troglodytes aedon*	M	20 Apr-23 May	21.7				11	7	
Winter Wren *Troglodytes troglodytes*	M	10 Mar-20 Apr	13.0			4	4		
Marsh Wren *Cistothorus palustris*	M	29 Mar-26 Apr	13.0			4	4		
Ruby-crowned Kinglet *Regulus calendula*	W	4 Jan-12 Apr	60.9	63	37	26	35		
Western Bluebird *Sialia mexicana*	W	4 Jan-4 Jan	4.3	18					
Swainson's Thrush *Catharus ustulatus*	M	12 May-12 May	4.3					4	
Hermit Thrush *Catharus guttatus*	W	1 Feb-1 Feb	4.3		4				
American Robin *Turdus migratorius*	P*	4 Jan-30 Jun	100.0	14	43	40	27	26	26
Water Pipit *Anthus spinoletta*	W	4 Jan-12 Apr	21.7	43			8		
Loggerhead Shrike *Lanius ludovicianus*	W	4 Jan-4 Jan	4.3	4					

Table 1 (Cont.)

Species	Status	First and last date of occurrence	Frequency of occurrence (%)	Monthly density (avg. no. individuals/40 ha) Jan	Feb	Mar	Apr	May	Jun
European Starling *Sturnus vulgaris*	P*	4 Jan-30 Jun	100.0	18	25	39	24	79	55
Solitary Vireo *Vireo solitarius*	M	3 May-3 May	4.3					35	
Warbling Vireo *Vireo gilvus*	S*	26 Apr-15 Jun	17.4				4	9	9
Virginia's Warbler *Vermivora virginiae*	M	26 Apr-26 Apr	4.3				48		
Lucy's Warbler *Vermivora luciae*	S*	29 Mar-30 Jun	34.8			4	39	18	18
Yellow Warbler *Dendroica petechia*	S*	5 Apr-30 Jun	47.8				42	76	86
Yellow-rumped Warbler *Dendroica coronata*	W	4 Jan-3 May	73.9	13	15	28	137	74	
Black-throated Gray Warbler *Dendroica nigrescens*	M	12 Apr-12 Apr	4.3				9		
Townsend's Warbler *Dendroica townsendi*	M	26 Apr-26 Apr	4.3				26		
American Redstart *Setophaga ruticilla*	M	12 May-12 May	4.3					4	
Northern Waterthrush *Seiurus noveboracensis*	M	3 May-12 May	8.7					4	
Common Yellowthroat *Geothlypis trichas*	S*	29 Mar-24 Jun	43.5			13	46	51	44
Wilson's Warbler *Wilsonia pusilla*	M	12 Apr-23 May	26.1				86	41	

Painted Redstart *Myioborus pictus*	M	22 Mar-3 May	13.0			4	4	4	
Yellow-breasted Chat *Icteria virens*	S*	3 May-30 Jun	30.4					35	35
Summer Tanager *Piranga rubra*	S*	26 Apr-30 Jun	34.8				18	26	26
Western Tanager *Piranga ludoviciana*	M	26 Apr-3 May	8.7				4	22	
Northern Cardinal *Cardinalis cardinalis*	P*	4 Jan-24 Jun	91.3	8	9	12	9	18	18
Black-headed Grosbeak *Pheucticus melanocephalus*	S*	20 Apr-30 Jun	39.1				7	18	18
Blue Grosbeak *Guiraca caerulea*	S*	23 May-30 Jun	21.7					44	18
Lazuli Bunting *Passerina amoena*	M	12 Apr-20 Apr	8.7				15		
Green-tailed Towhee *Pipilo chlorurus*	M	20 Apr-3 May	13.0				4	4	
Rufous-sided Towhee *Pipilo erythrophthalmus*	W	4 Jan-29 Mar	43.5	10	6	6			
Brown Towhee *Pipilo fuscus*	P	18 Jan-1 Jun	17.4	4	4		4		9
Abert's Towhee *Pipilo aberti*	P*	11 Jan-30 Jun	82.6	9	8	8	7	18	18
Chipping Sparrow *Spizella passerina*	M	22 Mar-20 Apr	17.4			18	7		
Song Sparrow *Melospiza melodia*	W	4 Jan-3 May	69.6	50	37	15	10	4	
Lincoln's Sparrow *Melospiza lincolnii*	W	4 Jan-12 May	69.6	16	9	6	9	18	
Swamp Sparrow *Melospiza georgiana*	W	11 Jan-26 Apr	17.4	9	9	4	4		

Table 1 (Cont.)

Species	Status	First and last date of occurrence	Frequency of occurrence (%)	Monthly density (avg. no. individuals/40 ha) Jan	Feb	Mar	Apr	May	Jun
White-throated Sparrow *Zonotrichia albicollis*	M	15 Mar-12 Apr	13.0			9	13		
White-crowned Sparrow *Zonotrichia leucophrys*	W	11 Jan-12 May	65.2	11	30	77	71	26	
Dark-eyed Junco *Junco hyemalis*	W	4 Jan-20 Apr	60.9	148	79	38	39		
Red-winged Blackbird *Agelaius phoeniceus*	P*	4 Jan-30 Jun	73.9	147	480	91	33	27	30
Western Meadowlark *Sturnella neglecta*	P	4 Jan-24 Jun	21.7	22	18				20
Brewer's Blackbird *Euphagus cyanocephalus*	W	4 Jan-1 Feb	17.4	63	53				
Great-tailed Grackle *Quiscalus mexicanus*	M	30 Jun-30 Jun	4.3						4
Brown-headed Cowbird *Molothrus ater*	S*	20 Apr-30 Jun	39.1				9	20	43
Northern Oriole *Icterus galbula*	S*	20 Apr-15 Jun	26.1				4	9	9
House Finch *Carpodacus mexicanus*	P*	11 Jan-30 Jun	95.7	23	23	22	22	26	53
Pine Siskin *Carduelis pinus*	M	22 Mar-5 Apr	8.7				70	44	
Lesser Goldfinch *Carduelis psaltria*	S*	22 Mar-30 Jun	30.4			9	4	22	50
American Goldfinch *Carduelis tristis*	W	11 Jan-12 Apr	26.1	4	4	37	4		

Equitability for species confined primarily to riverbottom areas was fairly uniform throughout winter and spring months, but in May and June it averaged lower than in earlier months. Equitability for species associated with wooded areas was surprisingly constant throughout the 6-month period.

Species diversity for those birds primarily of riverbottom areas was generally similar throughout winter and early spring months, but declined in May and June. In wooded areas diversity was lowest in January, steadily increased from February through May, and declined slightly in June.

Numbers of birds per 40 ha and the corresponding components of species diversity for each month based on the data in Table 1 (for which no habitat distinctions were made) are shown in Table 3. Density values for the entire study area also showed expected seasonal trends, i.e., numbers were stable during January and February, declined slightly in March, peaked in April and May, and declined again in June. The number of species present each month showed a similar trend, but without a decline in March. Equitability during

Table 2. Seasonal variability in avian density, species richness, equitability, and diversity. Values shown for each habitat type, month, and measure are the mean, standard deviation, and range.

	January	February	March	April	May	June
Riverbottom (5.30 ha)						
Density	53.5	59.8	32.0	71.8	129.0	81.0
	21.3	73.9	7.6	53.7	5.6	26.1
	28-79	11-168	24-42	24-125	123-134	70-120
Species richness	8.5	6.5	7.8	8.8	7.7	5.3
	1.3	2.1	1.5	1.7	1.2	1.3
	7-10	4-9	6-9	7-11	7-9	4-7
Equitability	0.76	0.61	0.75	0.69	0.44	0.52
	0.08	0.32	0.12	0.23	0.05	0.11
	0.65-0.77	0.25-0.92	0.59-0.85	0.38-0.89	0.39-0.49	0.35-0.60
Species diversity	1.62	1.04	1.53	1.48	0.89	0.82
	0.26	0.47	0.34	0.49	0.11	0.11
	1.27-1.87	0.54-1.64	1.06-1.88	0.80-1.96	0.76-0.96	0.67-0.93
Woodland (9.15 ha)						
Density	168.3	140.3	144.5	201.0	257.7	219.8
	55.3	12.9	38.2	54.3	28.2	14.4
	127-249	124-152	113-200	133-256	238-290	209-240
Species richness	25.8	26.3	30.5	39.3	40.3	31.8
	2.4	0.5	1.9	6.5	4.5	3.1
	24-29	26-27	28-32	30-45	36-45	29-36
Equitability	0.82	0.85	0.89	0.85	0.91	0.92
	0.04	0.03	0.02	0.04	0.01	0.01
	0.77-0.87	0.82-0.89	0.87-0.91	0.82-0.91	0.90-0.95	0.91-0.93
Species diversity	2.68	2.78	3.03	3.09	3.36	3.16
	0.20	0.10	0.05	0.02	0.13	0.07
	2.46-2.85	2.75-2.91	2.97-3.08	3.08-3.11	3.24-3.50	3.09-3.26

Table 3. Monthly variability in density (no./40 ha), species richness, equitability, and diversity for the entire study area.

Month	Density	Species richness	Equitability	Species diversity
January	1454	50	0.86	3.35
February	1446	48	0.75	2.91
March	1077	55	0.90	3.62
April	2199	77	0.79	3.42
May	2409	67	0.78	3.26
June	1655	51	0.85	3.33

the 6-month period remained relatively high, with little variation (s.d. = 0.06). Species diversity throughout the period was also high and showed only moderate variability (s.d. = 0.24).

DISCUSSION

Patterns of community relationships often differ substantially from season to season and annual variation is also common (Anderson et al. 1981). Bird communities in particular often undergo conspicuous seasonal changes that produce alterations in population levels and species composition. Temporal variation is influenced by changes in environmental conditions, food resources, or habitat structure (Raitt and Pimm 1976, Rotenberry and Weins 1980, Karr and Freemark 1983, Blake 1984).

Factors determining the presence and abundance of species during winter months were not investigated, nor were such factors studied during spring and summer months. Nonetheless, my study demonstrates that the lower Gila River Valley provides important wintering habitat for numerous species. At least 59 bird species are known to have utilized the study area during winter. This is in stark contrast to other habitat types (Cink and Boyd 1984), which support only a fraction of the bird species wintering in the lower Gila River Valley.

Migrating passerines are known to show a decided preference for riparian over nonriparian habitats (Stevens et al. 1977). The availability of food, water and cover provided by these areas undoubtedly is important and strongly influences migrant distribution and abundance. The characteristic northbound and southbound bird movement along major waterways is common elsewhere, but river corridors are perhaps even more important to migrating birds in arid parts of the country than in humid, heavily vegetated regions (Wauer 1977).

The use of the lower Gila River Valley as a migration corridor is clearly exemplified by the presence of the many non-breeding land birds. The concentration of migrants here undoubtedly plays a key role in maximizing bird species diversity during this period, and demonstrates the importance of the Gila River Valley to migrating land birds.

Previous studies in southwestern riparian habitats have shown over 50% of the bird species occupying river valleys during the breeding season to be

exclusively dependent upon the gallery forest vegetation type (Carothers et al. 1982). Of the 112 species shown in Table 1, 42 nested within the confines of the study area, and all but 28 of the remaining species are known to breed in other portions of the Gila River Valley (Hubbard 1971, Baltosser 1975).

Breeding bird density for riverbottom habitat was 364 pairs per 40 ha and that for the wooded habitat was 512 pairs per 40 ha. Cliff Swallows, equally abundant in other portions of the Gila River Valley, were by far the most numerous species in the riverbottom. The Mourning Dove, Yellow Warbler, Bewick's Wren and European Starling were the most abundant species breeding in wooded areas.

Johnson et al. (1974), working approximately 11 km north of my study area, recorded 23 breeding species and approximately 310 pairs per 40 ha. He and his co-workers were unable to obtain precise population estimates for areas such as the cottonwood, Box-elder and willow stands of my area, but suggested populations of 620 pairs per 40 ha occurred in such areas and that the number of species was slightly higher. Zimmerman (1975) reported on three additional areas along the Gila River and estimated densities of 290, 650 and 750 pairs per 40 ha, with 39, 36 and 31 breeding species, respectively.

Seasonal fluctuations in the density of individual species reported by Anderson and Ohmart (1977) along the Colorado River show many values that approximate those for the same species in my study. Breeding densities of the present study are similar to other studies in the region, but the number of species contributing to these values was greater (i.e., 42 nesting species). Additional surveys conducted by Cole (1978) in the central Rio Grande Valley of New Mexico yielded an average of 508 pairs per 40 ha, with a maximum of 31 species at any one site. Carothers et al. (1974) estimated breeding densities along Arizona's Verde River to be from 425 to 847 pairs per 40 ha, with a maximum of 26 species at any one site. Stamp (1978) also conducted surveys along the Verde and found densities to be as high as 684 pairs per 40 ha, with a maximum of 30 species.

Riparian forests in arid portions of western North America have been shown to be of great ecological importance to bird populations (Carothers et al. 1974, Anderson and Ohmart 1977, Stamp 1978, Rosenberg et al. 1982). Several factors undoubtedly contribute to this, but perhaps one of the most significant with respect to the lower Gila River Valley is the fact that this portion of the river penetrates several distinct floristic and faunistic provinces. The mingling of these various elements, coupled with the climatic and topographic attributes of the area, undoubtedly exert a major influence. As a result, the lower Gila River Valley of New Mexico is especially noteworthy in terms of both species composition and diversity.

SUMMARY

Seasonal changes in avian composition, density and diversity were examined in the lower Gila River Valley of New Mexico throughout a 6-month period. The 112 bird species observed were grouped into four categories based on seasonal presence and breeding status. Thirty species were winter

residents or visitors, 29 were present only as migrants, 24 were summer residents or visitors, and 29 species were permanently resident. Fluctuations in avian density, species richness, equitability and species diversity in sandy riverbottom and adjacent woodland habitats, as well as for both areas combined, were documented. Seasonal changes in avian community structure showed that the area provided habitat for at least 59 species during the winter. The study area proved to be extremely important as a migration corridor, which helped to maximize species diversity during spring migration. Breeding bird density for the riverbottom habitat type was 364 pairs per 40 ha and that for the wooded habitat type was 512 pairs per 40 ha. Comparisons of the present study with similar studies in the region show numerous similarities, but the area is especially noteworthy because few river systems support so many species and individuals within such a limited area.

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Common Black Hawks

Sketch by Keith Hansen

NOTES

THE CASPIAN TERN AT MONO LAKE

JOSEPH R. JEHL, JR. Sea World Research Institute/Hubbs Marine Research Center, 1700 South Shores Road, San Diego, California 92109

Largest of the tern species, the Caspian Tern (*Sterna caspia*) breeds at both coastal and inland localities. The species was very localized in western North America until the 1940s, when a major expansion occurred. A second wave of colonization took place from the mid-1960s through the 1970s, and by the early 1980s 20 colonies totaling ca. 6000 pairs were known from California, Oregon, Washington, Idaho, Nevada, and Baja California (Gill and Mewaldt 1983). At least two other large colonies have subsequently formed (Tulare Lake, California, and Stillwater National Wildlife Refuge, Nevada). Wherever it breeds, this tern typically associates with other colonial larids.

The history of the colony at Mono Lake, California, where terns breed amid California Gulls (*Larus californicus*) is not well documented. The species was not reported by Dawson (1923) or Grinnell and Miller (1944), and D.W. Johnston (pers. comm.) did not recall seeing either terns or suitable nesting habitat in 1952 or 1953. Neither was it mentioned by Gallup (1963), who was banding gulls and terns in the West and visited Mono Lake in 1963. Jurek (1972) noted that terns had nested in the past but gave no details.

This species prefers flat sandy nesting areas with unobstructed visibility. Although such habitat is abundant on Paoha Island, which formed ca. 200 years ago (S. Stine pers. comm.), I know of no evidence that terns ever nested there. (For a map of Mono Lake and its islets, see Jehl et al. 1984.) Apparently the colony formed in the mid 1950s — or more likely the mid 1960s — when the declining lake began to expose nesting habitat on some of the sandier Negit Islets. In any event, by 1976 terns were nesting with gulls on Twain (and Pancake?) of the Negit Islets (Winkler 1977), and they continued to nest on Twain Islet until at least 1981 (Winkler pers. comm.; Gill and Mewaldt 1983). In 1982 and 1983, I found them on Gull Islet of the Paoha Islets, which group began to emerge in the 1960s. When the rising lake inundated Gull Islet in 1983, they moved to adjacent Browne Islet and nested there from 1984 to 1986.

Terns arrive in the Mono Basin in early April (earliest 29 March, D. Gaines pers. comm.) and take up residence on the islets by the middle of the month. Because they feed on fish, which they obtain from nearby fresh-water lakes, their dependence on Mono Lake is limited to the availability of secure nesting areas. Laying evidently begins in mid-May, for tiny chicks may be present by mid-June (12 June 1984). Some early nests are destroyed by gulls; in 1983 and 1985 chicks were not seen until 26-27 June, and in 1983 a day-old chick was present on 20 July. Fledging typically occurs in mid to late July, after which time terns depart, although in 1976 several young and fledglings were seen on Twain Islet as late at 30 August (Winkler 1977). I interpret the occasional birds that sometimes appear in early September as transients from colonies farther inland. The latest record is 15 September (D. Gaines pers. comm.).

Table 1. Population size and nesting success of Caspian Terns at Mono Lake, California, 1976-1986.

Year	Location	Max. No. Adults	No. Pairs Nesting	No. Chicks Fledged	References
1976	Negit Islets: Twain/Pancake	38	6-12?	10?	Winkler 1977, and pers. comm.
1979	Negit Islets: Twain	No data	10-15	?	Gill and Mewaldt 1983, Winkler pers. comm.
1980 -81	Negit Islets: Twain	No data	—	—	Winkler pers. comm.
1982	Paoha Islets: Gull	22	ca. 14	3-4	This study
1983	Paoha Islets: Gull A	24	ca. 14	2	This study
1984	Paoha Islets: Browne	10	5	0	This study
1985	Paoha Islets: Browne	6	2	0	This study
1986	Paoha Islets: Browne	4	1?	0	This study

Terns are sensitive to disturbance (Fetterolf and Blokpoel 1983), and when challenging intruders leave their eggs and chicks vulnerable to gulls. Accordingly, I made no attempt to study their biology in detail but monitored the nesting area from a small boat. Since the late 1970s colony size had decreased from 10-15 pairs to one in 1986, and production has dropped from ca. 10 chicks in 1976 to none in 1984-1986 (Table 1). Predation by gulls has been largely responsible for the poor success since 1982, and was noted in 1979 as well (D. Winkler pers. comm); occasional unauthorized visits by humans may also be a contributing factor. In 1983, one chick died after being entangled in a monofilament fishing line, and in 1984 one was killed by a Great Horned Owl (*Bubo virginianus*).

California Gulls prefer more irregular nesting terrain than terns (J.R. Jehl, Jr. and S.A. Mahoney, unpubl.) but, if their preferred sites are occupied, as is the case on most of the Paoha Islets, will shift into featureless areas and displace nesting terns (see also Kingery 1985). Since 1982, because of a rising lake level and severe erosion, nesting densities of gulls have generally increased on the Paoha Islets, and the ternery has been surrounded and encroached on by breeding gulls. As a result, any benefits terns might have realized by nesting with gulls have been countered by increased predation. Although much unoccupied tern habitat exists on Coyote Islet, only 200 m from Browne Islet, where they could nest farther from dense concentrations of gulls, they have not moved or even investigated potential sites there. Such a move might have decreased the risk of predation by gulls but, ironically, would have increased the risk of predation by Great Horned Owls and Golden Eagles (*Aquila chrysaetos*) (Jehl and Chase, in press), which concentrated their efforts on that islet from 1982 to 1986.

Gill and Mewaldt (1983) contended that colonies of Caspian Terns in the inland West are maintained largely by immigration and not by local production. The Mono

Lake colony seems to fit their interpretation. It seems unlikely to recover and become self-sustaining so long as the gull population continues to grow.

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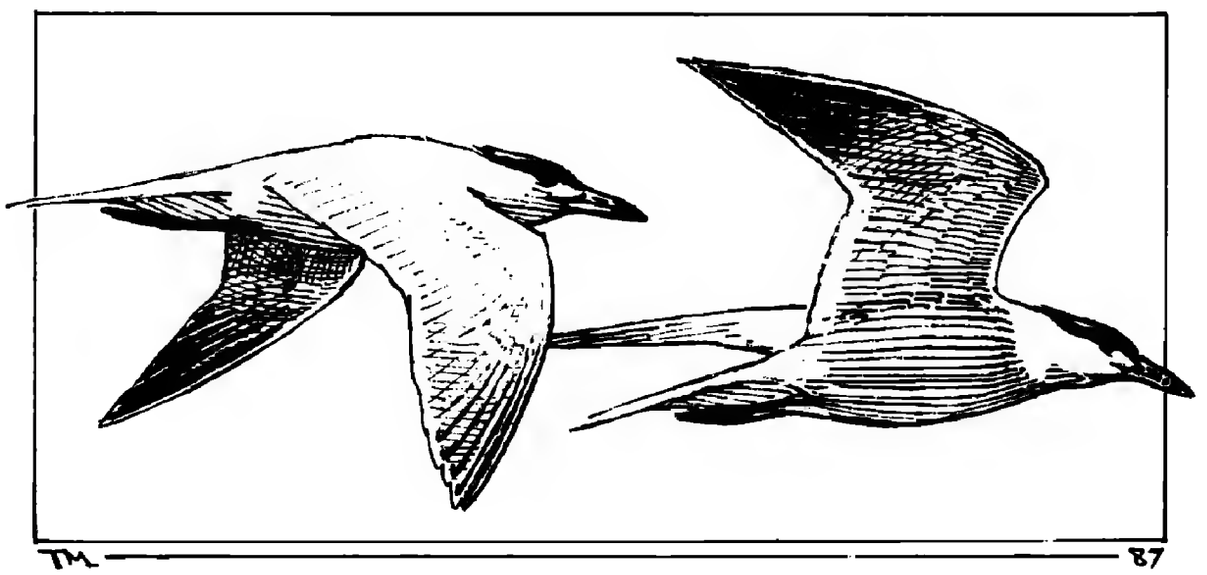

Caspian Terns *Sketch by Tim Manolis*

NEW AMERICAN WHITE PELICAN NESTING COLONY IN WYOMING

SCOTT L. FINDHOLT, Game and Fish Department, 260 Buena Vista Drive, Lander, Wyoming 82520 (present address: Wyoming State Training School, Lander, Wyoming 82520)

Five comprehensive surveys of American White Pelican (*Pelecanus erythrorhynchos*) nesting colonies were made in the United States between 1931 and 1982 (Thompson 1933; Lies and Behle 1966; Sloan 1973a, 1982; Sidle et al. 1985). In 1979 Sloan (1982) found only 17 active breeding colonies in the United States. Although this number represented an increase of three nesting colonies since 1972, the overall breeding population had declined (Sloan 1973a, 1973b, 1982). Therefore, Sloan (1982) recommended that this species be classified as threatened. In the most recent survey, Sidle et al. (1985) reported 19 active breeding sites and a nesting population of 44,598 white pelicans in the United States, which was two additional nesting colonies and over 10,000 more breeding birds than reported by Sloan (1982). In contrast to the findings of previous surveys, Sidle et al. (1985) concluded that populations of white pelicans were stable or increasing in most areas of the United States.

On 24 May 1984, while conducting an aerial survey for colonial nesting waterbird breeding sites, I discovered a new white pelican nesting colony in Wyoming on an island in Pathfinder Reservoir (42° 23′ N, 106° 56′ W), about 70 km northeast of Rawlins, Carbon County. Two hundred forty-five pelican nests were counted when the colony was censused from the ground on 15 June. Only nests that contained eggs or young were recorded; the total thus obtained approximated the total number of nests in the colony. Most nests were in the late incubation or early hatching stages. The larger of the two groups of pelican nests contained 196 nests and was on the ground among Silver Sagebrush (*Artemisia cana*). Twenty-seven active Double-crested Cormorant (*Phalacrocorax auritus*) nests were associated with this group of breeding pelicans. The smaller group of pelican nests, about 50 m northeast of the main group, had 49 nests, which were on the ground below a small clump of Plains Cottonwoods (*Populus sargentii*) about 8 m tall. Other colonial nesting waterbirds on the island included the following: Double-crested Cormorant (126 active nests), Great Blue Heron (*Ardea herodias;* 38 active nests), California Gull (*Larus californicus;* 683 active nests), and Caspian Tern (*Sterna caspia;* 15-20 active nests).

On 25 July, 169 flightless, nearly full-grown pelican young were banded with U.S. Fish and Wildlife Service numbered aluminum bands. Another 38 young were counted and left unbanded. The nesting island was thoroughly searched for dead young pelicans on 24 August after most young had fledged, and one dead banded and three unbanded young were discovered. From these data, I calculated that 203 or about 0.83 young fledged per nesting attempt. Strait and Sloan (1974) determined from band-recovery data and reproductive success studies that a fledging rate of slightly less than one young per nest is probably required for population stability in white pelicans. Therefore, if 1984 was a representative year, reproductive success at Pathfinder Reservoir may be adequate for population maintenance. Of course, population stability needs to be determined over a period of several years.

Pathfinder Reservoir has a surface area of 8908 ha and storage capacity of 1.24×10^9 m^3. Constructed in 1909 originally to store water for irrigation, it is subjected to fluctuating water levels throughout the white pelican's breeding period. The nesting island is located about 0.76 km from the mainland and near the mouth of Sand Creek. Although colonial waterbirds were first reported to be nesting here in 1982 by T. Varcalli (pers. comm.), white pelicans were not among the species found breeding. White

pelicans probably first nested here no earlier than 1983. When I first visited the colony on 15 June, the area of the nesting island was about 12.1 ha but increased to nearly 23.6 ha by the time most pelicans had fledged on 24 August. The nesting island is 1788 m in elevation, and, when the reservoir reaches storage capacity, the relief of the island is 4.9 m at its highest point. The soil on the island is a light sandy loam. Dominant vegetation consists of Silver Sagebrush, Rubber Rabbitbrush (*Chrysothamnus nauseosus*), and Sand Dock (*Rumex venosus*). Other common plants found on the nesting island include Plains Cottonwood, Spanish Bayonet (*Yucca glauca*), and willow (*Salix* sp.).

The only other known nesting colony of white pelicans in Wyoming is on the Molly Islands, Yellowstone Lake, Yellowstone National Park (Schaller 1964, Diem and Condon 1967). In addition to this pelican colony, the nearest known nesting sites to Pathfinder Reservoir are Riverside Reservoir, Weld County, Colorado (Ryder and Grieb 1963, Miller 1982), Great Salt Lake, Box Elder County, Utah (Behle 1958, Knopf 1979) and LaCreek National Wildlife Refuge, Bennett County, South Dakota (McCrow 1974).

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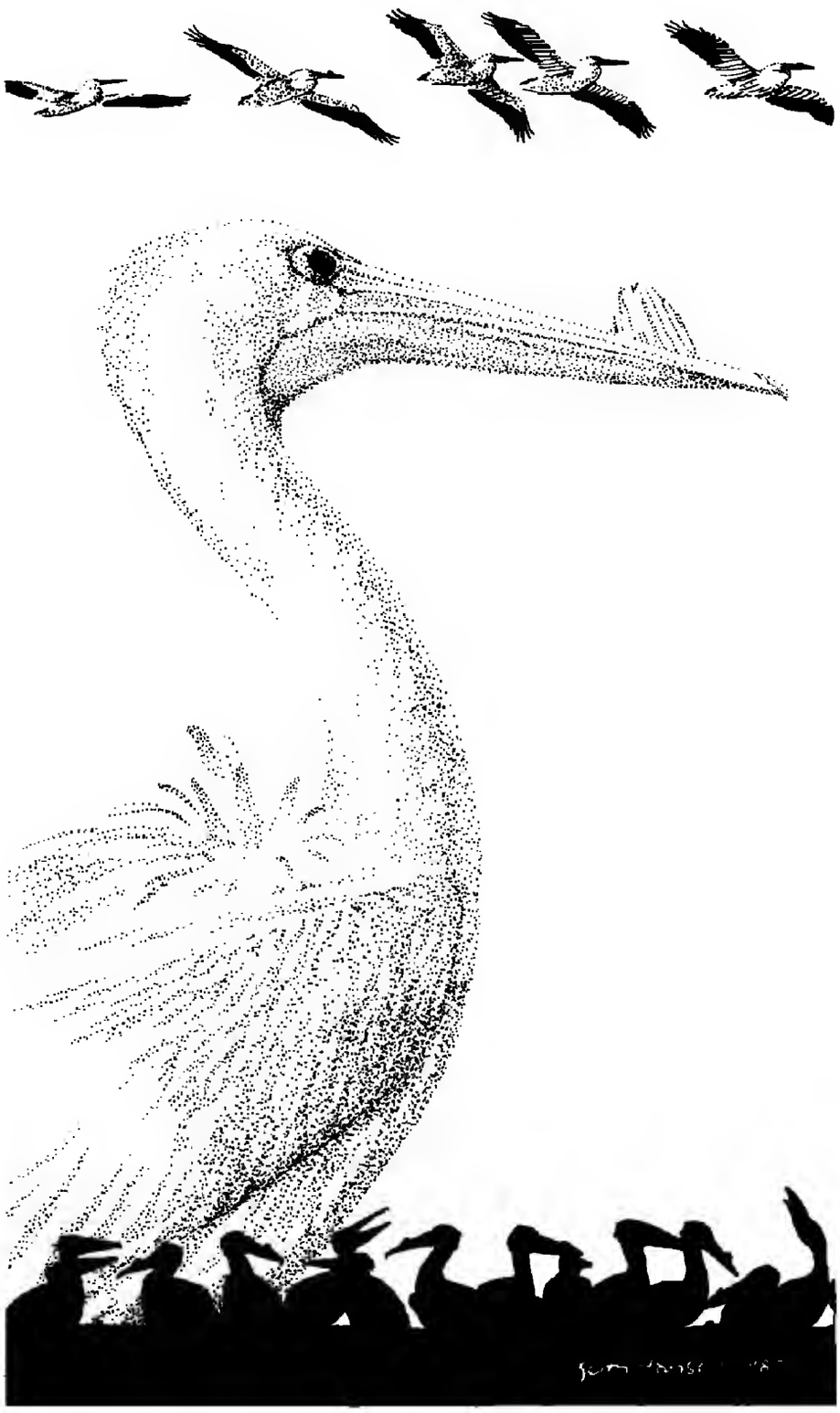

American White Pelicans *Sketch by Keith Hansen*

GILA WOODPECKER NESTING IN NORTHERN BAJA CALIFORNIA

JAMES W. CORNETT, Natural Science Department, Palm Springs Desert Museum, P.O. Box 2288, Palm Springs, California 92263

The range of the Gila Woodpecker (*Melanerpes uropygialis*) coincides closely with the distribution of the Saguaro (*Carnegiea gigantea*) and Cardon (*Pachycereus pringlei*) cacti of the Sonoran Desert (Robbins et al. 1983). The woodpeckers' nest cavities are usually excavated in the trunks and branches of these giant succulents and to a lesser extent in cottonwoods (*Populus*), mesquite (*Prosopis*), and willow (*Salix*) (Bent 1939). The range of the Cardon extends to within 130 km of the U.S. border (Wiggins 1980) and presumably Gila Woodpeckers nest in this region. There is one record of a Gila Woodpecker from "Las Palmas Canyon" in extreme northern Baja, beyond the range of the Cardon (Grinnell 1928). Unfortunately, the precise location of "Las Palmas Canyon" is unknown and could be any of several canyons draining the eastern slopes of the Sierra Juarez that harbor palms.

On 15 May 1984 Jim Toenjes and I observed two pairs of Gila Woodpeckers 44 km south of the U.S. border, in Tajo Canyon (32° 15′ 41″ N, 115° 51′ 25″ W), Baja California Norte. Both pairs were calling vigorously. No Cardon cacti were in the canyon or on the surrounding hillsides. The only likely nesting sites were in dead standing Desert Fan Palms (*Washingtonia filifera*) and Blue Fan Palms (*Erythea armata*), of which there were 14 and 6, respectively, in the eastern 5 km of the canyon. We did not, however, observe any active nests. Nearly 400 living palms with trunks exceeding 2 m in height existed in this portion of the canyon.

The following day I visited Blue Palm Canyon (32° 22′ 31″ N, 115° 50′ 19″ W), also in Baja California Norte, approximately 24 km south of the U.S. border. Again, no Cardon cacti were in the vicinity, and the only large trees were Desert and Blue Fan Palms. I observed a single pair of Gila Woodpeckers, both of which were actively feeding young in a nest cavity in a dead Blue Fan Palm. The oasis in this canyon had 129 large palms, three of which were dead but still erect.

Approximately 122 Desert Fan Palm oases exist in the U.S. yet Gila Woodpeckers are not known to nest in any of these oases. One significant difference between the palm oases of northern Baja and southern California is the absence of Blue Fan Palms in the U.S. groves, a palm species that reaches its northern limit in Blue Palm Canyon. My studies of palm oases suggest that *E. armata* may require some precipitation in summer, which decreases inversely with latitude in this region. Perhaps a lack of suitable nesting sites, i.e., Blue Fan Palms, in conjunction with insufficient summer rain and resultant decrease in food resources prevents the Gila Woodpecker from establishing itself at palm oases in the U.S. I note also that European Starlings (*Sturnus vulgaris*) frequently nest in many U.S. palm oases, most of which are located within 50 km of urban areas. I have yet to see a starling in any of the palm oases of Baja California Norte, all but one of which are located more than 75 km from the nearest town or city.

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FIRST VERIFIED RECORD OF THE MEW GULL FOR IDAHO

JOHN W. WEBER, Department of Civil and Mechanical Engineering, Texas A&I University, Kingsville, Texas 78363

The first report of the Mew Gull (*Larus canus*) for Idaho is of an unverified sighting I made of two adults on a gravel bar in the Clearwater River at Lewiston, Nez Perce County, on 23 April 1978 (Weber 1981).

To my knowledge, the first verified record is of a subadult bird I photographed at the public beach at Coeur d'Alene, Kootenai County, on 22 July 1982. This gull, which had several flecks of black on a white tail but which was otherwise in adult plumage, was in a flock of about 50 Ring-billed Gulls (*L. delawarensis*). The original photograph (on file in the Idaho Museum of Natural History, Pocatello) clearly shows the field marks of this species: unmarked, short greenish-yellow bill, greenish-yellow legs, dark eyes. In addition, the Mew Gull was slightly smaller and had a darker mantle than nearby Ring-billed Gulls. The black and white print (Fig. 1) shows the short, unmarked bill and dark eyes.

For North America, the A.O.U. Check-list (1983) mentions *canus* as occurring in winter from southern Alaska (west to the Aleutians) south along the Pacific coast to northern Baja California and as casual in eastern Washington and eastern Oregon, at scattered interior locations in the West, and along the Atlantic coast. In addition, the A.O.U. Check-list mentions that nonbreeding birds occur in summer outside the

Figure 1. Mew Gull at Coeur d'Alene, Kootenai County, Idaho, 22 July 1982.
Photo by John W. Weber

northern breeding range south to Washington, central Alberta, and central Saskatchewan. Mattocks (1979) lists *canus* as occurring in eastern Washington (east of the Cascades) from 29 February to 16 May in spring (four records) and in fall (17 records) from 8 September to 7 November. Thus, the 22 July record of *canus* discussed herein is noteworthy on another account: it represents the first summer record of this species for the eastern Washington-northern Idaho region.

I thank Earl J. Larrison and Charles H. Trost for critically reviewing the manuscript. C.H. Trost graciously arranged to have the original photograph filed in the Idaho Museum of Natural History.

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Cover photo by William Ervin: Red Crossbill (*Loxia curvirostra*), foothills of Boulder Co., Colorado, January 1982.

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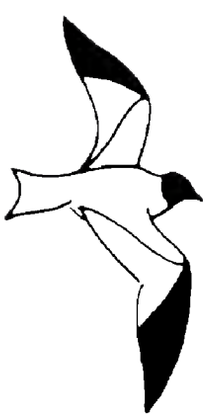

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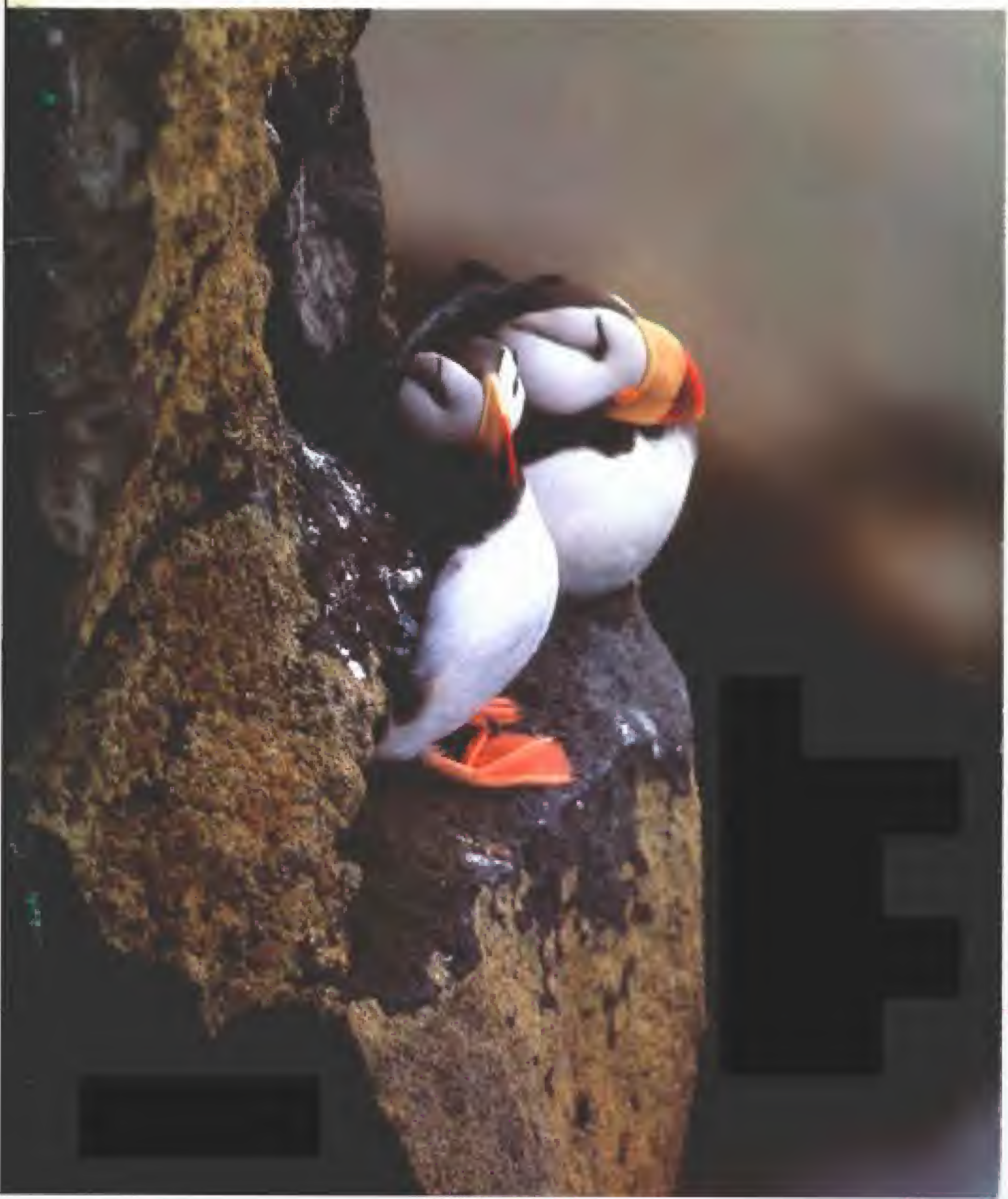

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WESTERN BIRDS

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DISTRIBUTION OF WINTERING SNOWY PLOVERS IN CALIFORNIA AND ADJACENT STATES

GARY W. PAGE, FRANCES C. BIDSTRUP, ROBERT J. RAMER, and LYNNE E. STENZEL, Point Reyes Bird Observatory, 4990 Shoreline Hwy., Stinson Beach, California 94970

Snowy Plovers of the subspecies *Charadrius alexandrinus nivosus* nest on sandy coastal beaches, around salt evaporation and agricultural drainage ponds, and on barren margins of interior alkaline and saline lakes in western North America. Human encroachment has caused nesting birds to disappear from many coastal breeding locations in California (Page and Stenzel 1981). Because of the continued threat of encroachment and the species' general scarcity, the California Department of Fish and Game has categorized the Snowy Plover as a species of special concern. Additionally, Snowy Plovers are considered threatened in Oregon by the Oregon Department of Fish and Wildlife, and endangered in Washington by the Washington Department of Game (U.S. Fish and Wildlife Service 1985). On a broader geographical basis, the U.S. Fish and Wildlife Service lists the Snowy Plover as a sensitive species, indicating its candidacy for threatened or endangered status if active management or removal of threats does not occur.

The conservation of any species requires, as its basis, detailed knowledge of population size and distribution during all seasons. Considerable progress toward this objective has been made for the Snowy Plover through recent statewide breeding bird surveys (Herman et al. 1981, Page and Stenzel 1981, Wilson-Jacobs and Meslow 1984, C. Bruce in litt.). About 5500 breeding birds have been located by these surveys in Washington, Oregon, California, and Nevada. Comparable information is now being collected for wintering birds in some of the same states.

We use the results of statewide censuses in California and Oregon between 1979 and 1986, along with published and unpublished records, to describe the abundance and distribution of wintering Snowy Plovers in California and other western states. In addition we estimate the size of the post-breeding population in western North America and attempt to reconcile that estimate with the results of the winter surveys and reported sightings.

METHODS

Between 1979 and 1985 hundreds of skilled volunteer observers counted Snowy Plovers monthly on coastal beaches in California. We asked counters to report the location covered, the starting and ending points of the census, date and time, beach conditions, the number of plovers checked and unchecked for color bands, and the color combinations of banded birds. Appropriate census sites were selected on the basis of published and unpublished knowledge of the occurrence of plovers or knowledge of suitable habitat (e.g., Page and Stenzel 1981). Our aim was to obtain a minimum of four censuses per site per winter, but at some sites, particularly those with limited access, census effort varied within and between years. Many additional sites, of questionable suitability, also were surveyed one or more times to determine if they were used by plovers.

The color-banded birds were primarily breeders from coastal Oregon and California sites at Monterey Bay, Morro Bay, and Mono Lake. Sightings of banded birds provided information on the wintering sites of breeders, use of multiple sites by breeding and wintering plovers, and dispersal of juvenals.

We define winter as 1 November through 28 February to exclude the breeding season and most migration (Warriner et al. 1986) and divide California into mainland coast, San Francisco Bay, Channel Islands, and interior regions. Winter population estimates for the Channel Islands and the interior are based largely on pre-existing information and incidental sightings; estimates for the mainland coast and San Francisco Bay are from surveys. Following Page and Stenzel (1981) we identify census locations along the mainland coast with names and latitudes from topographic or highway maps and categorize locations by the following types:

BLUFF-BACKED BEACH (B): beach backed by cliffs, bluffs, or other non-dune upland habitat.
DUNE-BACKED BEACH (D): beach backed by dunes that may be interrupted by a river, creek, pond, lagoon, or salt pan.
POCKET BEACH (P): beach at a river or creek mouth or lagoon, delimited and dominated by bluffs or rocky points.
SPIT (S): a sand spit or bar (long enough not to be dominated by nearby bluffs) separating the ocean from a coastal wetland. (Pescadero Beach, San Mateo County, is the shortest beach so categorized.)
ESTUARINE (E): a disturbed or naturally open area in or at the margin of an estuary or lagoon, including salt pans or levees in salt evaporators.
URBAN SHORELINE (U): a sandy beach or other area backed by residential or commercial development and usually receiving heavy human use. This includes harbor shorelines.

We differ from Page and Stenzel (1981) on categorization of the lagoon areas of northern San Diego County; whereas Page and Stenzel categorize them as estuarine because birds nested on salt pans, we categorize them as spits or pocket beaches because the salt pans usually flood in winter and wintering birds were generally found on the beach.

Because the plovers flock in winter and these flocks sometimes use more than one site, a description of plover occurrence at winter sites should entail an estimate of the flock size and an estimate of the proportion of the time that the flock uses the area. For most sites we have too few surveys to estimate

the proportion of time the site was used, but to estimate flock size we were able to use the survey data as described below. For each site and census year we calculated the total number of censuses, the total number of censuses with plovers, and the maximum and median plover counts, ignoring zero counts in calculating medians and maxima unless all were zeros at a particular site in any year. These data were then summarized for the six-year period (Table 1), including zero yearly medians and maxima in calculations of the median of the median numbers and median of the maximum numbers for each site. Only locations with plovers on one or more counts are included in Table 1. We chose medians over means since we did not know, *a priori*, what the data would look like and wanted a robust estimate of flock size for each site. We also chose to give each year equal weight so that years with unusually sparse or thorough coverage did not unduly bias the estimate for all years. These "grand" medians, summed over all sites, are two potential estimates of the coastal winter population size.

We compared the above estimates to counts obtained on two surveys of 25 beaches between San Luis Obispo and Orange counties from 10 to 27 November 1984 and from 12 to 26 February 1986. On each survey, the one or two skilled observers covering each site moved between sites as quickly as possible to minimize chances of counting the same birds at different sites.

We resolved the problem of comparing winter and summer densities of plovers along the coastline by using the length of outer sandy beach in our calculations of densities for both seasons. This causes our breeding density estimates to differ somewhat from those of Page and Stenzel (1981) because their calculations and densities were based strictly on the habitat used during the breeding season (including inner shorelines of coastal embayments and excluding bluff-backed sandy beaches).

To increase readability, in presenting results we omit one reference frequently used and abbreviate two others. All references to kilometers of coastline and the amount of sand beach in each county are from Anon. (1971). ABN refers to *American Birds* notebooks, an unpublished compilation of bird records submitted by observers to the editors of the regional report for the Middle Pacific Coast Region published quarterly in *American Birds*. CBC refers to Christmas Bird Counts, also published in *American Birds*.

RESULTS AND DISCUSSION

California Mainland Coast Populations

The estimated winter population sizes for the mainland coast were 1555 birds from summed medians and 2511 from summed maxima (Table 1). The 1984 and 1986 winter surveys of the 25 selected sites from San Luis Obispo to Orange counties were 665 and 801 Snowy Plovers, respectively. Summation of the medians gave an estimate of 431 birds; summation of the maxima gave an estimate of 722 birds for the same areas. For the medians this was equivalent to 65% and 54%, respectively, of the birds tallied on the two surveys; for the maxima the equivalents were 109% and 90% of the tallied birds. These results suggest that the median of the maximum counts corresponds most closely to results that would be obtained in a comprehensive

survey, and that approximately 2500 Snowy Plovers wintered along the mainland coast during our survey period. The "grand medians" of the maximum survey counts are indicated in Figure 1.

The ratio of wintering to breeding Snowy Plovers along the mainland coast is about 2.6:1. The differences between the two population sizes are most striking between Sonoma and San Mateo counties, because, from north to south, the density of wintering birds begins to increase in Sonoma and Marin counties whereas the density of breeders does not increase until Santa Cruz and Monterey counties (Table 2). The low number of breeders relative to wintering birds suggests that suitable nesting habitat in the region from Sonoma to San Mateo counties is scarcer than suitable foraging and roosting habitat.

Spits and dune-backed beaches, each with 32% of the estimated 2511 birds, were the coastal habitats with the most wintering Snowy Plovers. Pocket beaches were not used by wintering plovers in the northern part of the state, in contrast to the region from San Mateo County south (Table 1); apparently longer segments of beach are required to support Snowy Plovers on the northern coast. Urban and bluff-backed beaches were used by some wintering plovers (Table 1), whereas neither habitat supports breeding birds (Page and Stenzel 1981). Although tidal flats and lagoon margins provide foraging habitat for birds in many instances, roost sites are typically on beaches, where the birds are usually counted. The close proximity of tidal flats for foraging may be one reason that so many wintering plovers are found on adjoining spits. Estuarine areas we identified as providing both foraging and roosting sites for plovers in winter were San Diego Bay, San Francisco Bay, and the Moss Landing salt evaporators in Monterey County.

Coastal Winter Plover Distribution by County

Del Norte County: About 54% of Del Norte County's 73-km shoreline is sandy beach. Small numbers of plovers winter irregularly here. We recorded them only at Lake Talawa (Table 1), but there is an additional record of six birds on 18 December 1983 at the Smith River spit (ABN). Single surveys of Pelican State Beach, Smith River mouth, and Crescent Beach turned up no plovers.

Humboldt County: We estimated 63 wintering Snowy Plovers for the 195 km of Humboldt County shoreline, 68% of which is sandy beach. Page and Stenzel (1981) did not find breeding plovers on bluff-backed beaches, whereas wintering plovers were found along bluff-backed Gold Bluffs Beach during two of three winters (Table 1). Wintering plovers also occurred regularly at Stone Lagoon even though none were reported breeding there. Two winter censuses, each in different years at Big Lagoon, produced only one plover although 13 were found here during the 1977 breeding season (Page and Stenzel 1981). Our methods produced a zero winter estimate for the Mad River mouth, which had 17 breeders in 1977 (Page and Stenzel 1981). On many winter censuses the entire spit was not covered, so possibly some plovers were missed. Wintering birds were found here in two of six census years (Table 1). Other sites, checked once or twice, which produced no plovers were Agate, Moonstone, and Luffenholtz beaches, Arcata Oxidation Pond, Humboldt Bay Reserve, and Mattole River mouth.

Figure 1. Distribution of wintering Snowy Plovers in California. Closed circles indicate data that represent a minimum of two years of survey, with three surveys per year. Open circles indicate data based on fewer surveys.

Table 1. Results of winter Snowy Plover counts along the mainland California coast.

Site	Latitude	Beach type[a]	Total years[b]	Total counts[b]	Yearly median bird numbers[c]	Yearly maximum bird numbers[c]
Del Norte County						
Lake Talawa	41° 50′ 00″	D	4 (2)	6 (4)	1 (0-2)	1 (0-3)
Humboldt County						
Gold Bluffs Beach	41° 25′ 00″	B	3 (2)	10 (7)	1 (0-5)	2 (0-9)
Stone Lagoon	41° 14′ 30″	S	4 (4)	15 (12)	8 (7-12)	9 (7-14)
Clam Beach/Little R. Mouth	41° 00′ 00″	D	6 (4)	8 (6)	10 (0-27)	11 (0-29)
Mad River Spit	40° 56′ 00″	S	6 (2)	19 (2)	0 (0-11)	0 (0-11)
Humboldt Bay North Spit	40° 47′ 00″	S	2 (1)	3 (1)	2 (0-3)	2 (0-3)
Humboldt Bay South Spit	40° 45′ 00″	S	5 (5)	17 (10)	14 (12-27)	27 (20-34)
Eel River North Spit	40° 40′ 00″	S	1 (1)	2 (2)	3	6
Eel River South Spit	40° 35′ 00″	S	1 (1)	5 (1)	6	6
Mendocino County						
MacKerricher Beach	39° 29′ 30″	D	6 (4)	12 (6)	22 (0-40)	23 (0-40)
Manchester Beach	38° 58′ 30″	D	4 (3)	28 (4)	2 (0-2)	2 (0-3)
Sonoma County						
Salmon Creek Beach	38° 20′ 30″	D	6 (6)	102 (65)	17 (3-31)	45 (6-66)
Doran Beach	38° 19′ 30″	S	6 (6)	125 (98)	23 (19-25)	48 (38-71)
Marin County						
Dillon Beach	38° 15′ 00″	D	6 (6)	30 (28)	32 (25-54)	38 (32-55)
Pt. Reyes: Kehoe-North Beach	38° 07′ 00″	D	6 (6)	42 (42)	22 (10-38)	49 (10-156)
Pt. Reyes: North Beach south	38° 01′ 30″	B	5 (5)	25 (16)	7 (4-15)	15 (4-27)
Drakes Spit	38° 01′ 45″	S	6 (6)	43 (28)	32 (15-60)	54 (33-70)
Limantour Spit	38° 01′ 30″	S	6 (6)	65 (54)	27 (20-58)	48 (23-127)
Bolinas Spit	37° 54′ 30″	S	6 (6)	81 (79)	21 (13-29)	29 (14-35)
San Francisco County						
Ocean Beach	37° 45′ 00″	U	6 (6)	26 (21)	8 (2-14)	14 (4-16)

Table 1 (Cont.)

Site	Latitude	Beach type[a]	Total years[b]	Total counts[b]	Yearly median bird numbers[c]	Yearly maximum bird numbers[c]
San Mateo County						
Sharp Park Beach	37° 37′ 30″	P	2 (2)	4 (2)	12 (10-13)	12 (10-13)
Linda Mar Beach	37° 36′ 00″	P	6 (5)	33 (26)	9 (0-15)	13 (0-23)
Princeton Harbor	37° 30′ 00″	D	6 (6)	44 (32)	22 (12-30)	29 (22-39)
Half Moon Bay State Beaches	37° 28′ 00″	D	6 (5)	29 (11)	12 (0-29)	19 (0-40)
San Gregorio State Beach	37° 19′ 30″	P	4 (2)	11 (6)	1 (0-5)	1 (0-7)
Pomponio State Beach	37° 18′ 30″	P	6 (6)	32 (19)	6 (2-28)	8 (2-40)
Pescadero State Beach	37° 16′ 00″	S	6 (6)	69 (56)	12 (4-19)	29 (13-52)
Gazos Creek Mouth	37° 10′ 00″	D	5 (5)	20 (18)	7 (6-25)	13 (7-25)
Año Nuevo Beach	37° 07′ 00″	D	4 (3)	12 (3)	4 (0-10)	4 (0-10)
Santa Cruz County						
Waddell Creek	37° 05′ 30″	P	6 (5)	53 (45)	16 (0-26)	29 (0-35)
Scott Creek	37° 02′ 30″	P	6 (6)	58 (55)	13 (5-34)	25 (13-47)
Davenport Beach	37° 00′ 30″	P	6 (3)	36 (3)	1 (0-4)	1 (0-4)
Laguna Creek	36° 59′ 00″	P	6 (6)	66 (37)	3 (3-8)	9 (3-14)
Wilder Creek Beach	36° 57′ 00″	P	6 (6)	112 (104)	24 (14-43)	36 (27-51)
Seabright State Beach	36° 57′ 30″	U	5 (4)	76 (38)	11 (0-15)	16 (0-17)
San Lorenzo River Mouth	36° 58′ 00″	U	5 (1)	30 (2)	0 (0-12)	0 (0-14)
Sunset Beach	36° 53′ 30″	B	6 (6)	71 (31)	3 (1-6)	5 (1-10)
Pajaro River Mouth	36° 51′ 00″	S	6 (6)	271 (234)	41 (11-65)	81 (28-117)
Monterey County						
Moss Landing Beach	36° 48′ 30″	S	6 (6)	130 (90)	25 (12-39)	69 (45-124)
Moss Landing Salt Ponds	36° 49′ 00″	E	6 (3)	25 (22)	25 (0-118)	45 (0-130)
Salinas River Mouth North	36° 46′ 30″	D	6 (6)	60 (53)	18 (2-39)	33 (5-60)
Salinas River Mouth South	36° 45′ 00″	S	5 (5)	33 (29)	18 (8-32)	30 (10-80)
Marina Beach	36° 42′ 00″	D	6 (6)	35 (25)	9 (2-28)	22 (2-48)
Del Monte Beach	36° 36′ 30″	D	6 (6)	69 (62)	38 (24-51)	50 (44-69)

Table 1 (Cont.)

Site	Latitude	Beach type[a]	Total years[b]	Total counts[b]	Yearly median bird numbers[c]	Yearly maximum bird numbers[c]
Asilomar Beach	36° 37′ 30″	P	6 (4)	45 (15)	18 (0-23)	19 (0-26)
Carmel River Mouth	36° 32′ 30″	P	6 (6)	47 (28)	14 (4-18)	17 (11-19)
Point Sur Beach	36° 18′ 30″	P	3 (3)	6 (6)	50 (28-52)	52 (28-68)
San Luis Obispo County						
San Carpoforio Creek	35° 46′ 00″	P	3 (3)	6 (6)	20 (10-31)	21 (21-31)
Point Sierra Nevada Beach	35° 43′ 00″	P	2 (2)	5 (3)	10 (8-11)	15 (8-21)
Arroyo de la Cruz	35° 42′ 00″	P	2 (1)	2 (1)	1 (0-1)	1 (0-1)
Sidney's Lagoon	35° 41′ 00″	P	2 (1)	6 (4)	5 (0-10)	10 (0-20)
Point Piedras Blancas	35° 40′ 00″	P	4 (2)	20 (9)	2 (0-14)	2 (0-31)
Arroyo Laguna Creek	35° 39′ 00″	D	6 (6)	39 (26)	23 (13-33)	30 (23-33)
Pico Creek	35° 37′ 00″	P	3 (2)	5 (4)	0 (0-6)	0 (0-8)
San Simeon State Beach	35° 35′ 00″	P	6 (6)	37 (32)	17 (0-26)	34 (0-45)
Villa Creek	35° 27′ 30″	P	4 (4)	7 (7)	5 (0-13)	7 (0-16)
Cayucos Creek	35° 27′ 00″	U	4 (2)	137 (2)	1 (0-5)	1 (0-5)
Toro Creek	35° 24′ 30″	D	4 (1)	25 (11)	0 (0-5)	0 (0-12)
Atascadero Beach	35° 23′ 00″	D	6 (6)	105 (83)	44 (10-58)	71 (43-130)
Morro Bay Spit	35° 21′ 00″	S	6 (6)	40 (28)	31 (22-47)	72 (39-182)
Avila Beach	35° 10′ 30″	B	2 (1)	5 (1)	3 (0-6)	3 (0-6)
Pismo Beach North	35° 08′ 30″	U	2 (2)	6 (4)	4 (1-7)	7 (7-7)
Pismo Beach South	35° 03′ 00″	D	5 (5)	21 (13)	35 (17-78)	57 (25-105)
Oso Flaco Beach	35° 02′ 00″	D	2 (2)	7 (7)	16 (9-23)	19 (11-26)
Santa Maria River Mouth	34° 58′ 00″	S	6 (6)	50 (50)	20 (15-65)	48 (23-150)
Santa Barbara County						
Shuman Creek North	34° 50′ 30″	D	4 (4)	10 (8)	25 (16-26)	28 (18-34)
San Antonio Creek North	34° 48′ 00″	D	5 (5)	12 (11)	53 (24-179)	77 (59-179)
Purisima Point North	34° 45′ 30″	D	4 (4)	9 (9)	18 (3-26)	22 (3-154)
Santa Ynez River Mouth	34° 41′ 30″	D	6 (6)	37 (37)	23 (5-27)	65 (22-150)

Table 1 (Cont.)

Site	Latitude	Beach type[a]	Total years[b]	Total counts[b]	Yearly median bird numbers[c]	Yearly maximum bird numbers[c]
Jalama Beach	34° 30′ 30″	P	4 (3)	9 (7)	22 (0-32)	25 (0-35)
Devereaux Beach	34° 24, 30″	S	6 (6)	22 (19)	38 (27-61)	57 (31-100)
Goleta Beach	34° 25′ 00″	P	6 (6)	28 (23)	24 (4-72)	33 (6-72)
Santa Barbara Harbor	34° 24′ 30″	U	5 (4)	22 (18)	14 (0-34)	22 (0-68)
Carpenteria State Beach	34° 23′ 30″	U	3 (1)	3 (1)	0 (0-9)	0 (0-9)
Ventura County						
San Buenaventura Beach	34° 15′ 30″	U	2 (2)	13 (10)	24 (17-31)	28 (23-32)
Santa Clara River Mouth	34° 14′ 00″	D	5 (5)	33 (28)	14 (8-29)	25 (20-80)
Ormond Beach	34° 08′ 00″	D	2 (2)	6 (5)	24 (22-25)	41 (38-44)
Mugu Lagoon	34° 06′ 00″	S	3 (3)	18 (17)	20 (19-89)	116 (100-127)
Los Angeles County						
Zuma Beach	34° 01′ 00″	B	4 (4)	11 (10)	35 (31-39)	37 (31-59)
Corral Beach	34° 02′ 00″	U	1 (1)	6 (6)	8	8
Malibu Lagoon	34° 02′ 00″	U	6 (6)	48 (39)	19 (10-36)	31 (15-50)
Santa Monica Beach	34° 00′ 00″	U	2 (1)	3 (1)	2 (0-4)	2 (0-4)
Ballona Cr./Playa del Rey	33° 57′ 00″	U	4 (4)	9 (8)	3 (1-8)	3 (1-8)
El Segundo/Hermosa	33° 52′ 00″	U	4 (3)	32 (29)	13 (0-14)	14 (0-26)
Redondo/Torrance Beaches	33° 49′ 00″	U	2 (2)	12 (10)	8 (3-12)	10 (3-17)
Orange County						
Bolsa Chica	33° 42′ 00″	S	5 (5)	32 (15)	3 (1-16)	4 (1-39)
Huntington Beach	33° 39′ 00″	U	2 (1)	8 (3)	2 (0-3)	3 (0-5)
Balboa/Newport Beaches	33° 36′ 30″	U	3 (1)	6 (1)	0 (0-4)	0 (0-4)
Crystal Cove	33° 34′ 30″	B	6 (6)	134 (122)	7 (5-13)	12 (7-19)
Aliso Beach	33° 30′ 30″	P	4 (1)	8 (2)	0 (0-1)	0 (0-1)
Doheny State Beach	33° 27′ 30″	B	5 (4)	20 (13)	6 (0-17)	8 (0-34)

Table 1 (Cont.)

Site	Latitude	Beach type[a]	Total years[b]	Total counts[b]	Yearly median bird numbers[c]	Yearly maximum bird numbers[c]
San Diego County						
San Onofre Beach	33° 23′ 00″	B	2 (1)	2 (1)	3 (0-6)	3 (0-6)
Santa Margarita R. Mouth	33° 14′ 00″	S	5 (5)	16 (12)	16 (2-30)	25 (2-63)
San Luis Rey R. Mouth	33° 12′ 00″	U	4 (2)	16 (4)	3 (0-7)	3 (0-14)
Agua Hedionda Lagoon	33° 08′ 30″	S	4 (3)	9 (4)	4 (0-6)	4 (0-10)
Batiquitos Lagoon	33° 05′ 30″	P	4 (2)	14 (5)	3 (0-16)	3 (0-38)
San Elijo Lagoon	33° 00′ 30″	S	5 (5)	38 (28)	11 (1-29)	25 (20-77)
San Dieguito R. mouth	32° 58′ 30″	S	5 (5)	35 (34)	10 (6-24)	21 (9-38)
Los Penasquitos Lagoon	32° 56′ 00″	S	5 (5)	39 (33)	16 (7-20)	20 (10-28)
Whispering Sands	32° 52′ 00″	U	5 (3)	53 (28)	2 (0-4)	3 (0-7)
Fiesta Island, Mission Bay	32° 46′ 30″	E	2 (2)	6 (4)	21 (4-37)	50 (4-96)
Bonita Cove, Mission Bay	32° 46′ 00″	E	2 (2)	9 (8)	42 (30-54)	60 (40-80)
San Diego R. Flood Control Channel	32° 45′ 00″	U	3 (3)	4 (3)	11 (2-18)	11 (2-18)
North Island	32° 41′ 00″	D	1 (1)	1 (1)	17	17
Silver Strand State Beach	32° 39′ 00″	S	4 (3)	5 (4)	6 (0-27)	6 (0-36)
Delta Beach, San Diego Bay	32° 29′ 00″	E	2 (2)	2 (2)	16 (14-18)	16 (14-18)
Sweetwater R. mouth	32° 38′ 30″	E	2 (2)	3 (3)	33 (32-33)	36 (33-38)
Imperial Beach	32° 35′ 00″	S	3 (1)	3 (1)	0 (0-22)	0 (0-22)
Tijuana R. mouth	32° 33′ 00″	S	6 (5)	18 (16)	29 (0-93)	43 (0-100)

[a] For explanation of codes, see Methods section in text.
[b] Numbers in parentheses are numbers of counts on which plovers were found.
[c] Numbers are grand medians; numbers in parentheses are range of medians.

Table 2. Densities of Snowy Plovers along the mainland California coast.

Counties	Km of sand beach[a]	Breeding density[b]	Winter density[b]	Winterer/ breeder ratio[b]
Del Norte, Humboldt & Mendocino	196.8	0.41	0.45	1.1
Sonoma & Marin	69.8	0.57	4.67	8.2
San Francisco & San Mateo	54.5	0.24	2.61	10.9
Santa Cruz & Monterey	69.7	2.37(1.69)	7.73(7.09)	3.3(4.2)
San Luis Obispo & Santa Barbara	193.3	1.26	3.76	3.0
Ventura, Los Angeles, & Orange	200.2	0.77(0.68)	1.71(1.71)	2.2(2.5)
San Diego	102.2	2.51(1.22)	3.39(1.80)	1.4(1.5)

[a] From Anon. (1971).
[b] Densities in parentheses exclude birds in coastal wetlands and salt flats. For density calculations see Methods.

Mendocino County: Only 13% of Mendocino County's 193-km shoreline is sandy beach. We estimated 25 wintering plovers (Table 1); Page and Stenzel (1981) estimated 15 breeders in 1977. MacKerricher Beach was the main area used by plovers at both seasons. Other sites, checked once or twice, which produced no plovers were the Howard Creek, Wages Creek, Noyo River and Navarro River mouths, and the Caspar, Russian Gulch, Van Damme, and Fish Rock beaches.

Sonoma County: Only 18% of the 100-km Sonoma County shoreline is sandy beach. Our estimate of 93 winterers, at two sites in the Bodega Bay area (Table 1), likely overestimates the population size. Frequent and coordinated censuses showed that birds shifted between sites during the winter, making the sum of the maximum counts higher than the number of birds actually present. From censuses conducted simultaneously at the two sites, the median of maximum winter counts over the six years was only 72 birds. Other sites, which produced no plovers, were the Sonoma Coast State Beaches, surveyed 9 to 17 times over to a 2- to 3-year period, and the Gualala River mouth, surveyed 10 times between 1982 and 1985 and monthly from October 1975 to March 1979 (W. Eastman pers. comm.).

Marin County: Forty-six percent of Marin County's 113-km shoreline is sandy beach with an estimated 233 wintering Snowy Plovers (Table 1). The main wintering areas are Drakes and Limantour spits, Point Reyes Beach, Dillon Beach, and the spit at Bolinas Lagoon. All but Dillon Beach are breeding sites (Page and Stenzel 1981). The north and south sections of Point Reyes Beach are contiguous and should be considered as one area. They are separated in Table 1 because census data for the two segments were frequently obtained on different dates. Wintering Snowy Plovers shift between Drake's and Limantour spits during the winter. A subset of censuses

taken on the same or consecutive days at Drakes and Limantour spits indicated that 80 birds, rather than the 102 indicated by our general technique, would be a more accurate estimate for the two areas combined. Other sites, which produced no plovers, were Estero de San Antonio (9 surveys over 2 years), Estero Americano (8 surveys over 2 years), McClures Beach (7 surveys in 1 year), Blakes Landing on Tomales Bay (1 survey), Muir Beach (48 surveys in 6 years), and Rodeo Lagoon (28 surveys in 6 years).

San Francisco County: We estimated a winter population of 14 plovers for the 9.3 km of sand beach in San Francisco County, which extends along 13.4 km of coastal shoreline. All plovers occurred on Ocean Beach, which receives very heavy recreational use.

San Mateo County: We estimated 128 wintering Snowy Plovers for the 45 km of sandy beach along San Mateo County's 90-km shoreline. Wintering birds occurred at nine sites (Table 1), whereas the species is known to breed at only four: Pomponio, Pescadero, Año Nuevo, and Gazos Creek (Page and Stenzel 1981, authors' unpubl. data). It is likely that there was considerable overlap between wintering birds counted at Princeton Harbor and on the state beaches around Half Moon Bay. We also found color-banded plovers moving between Gazos Creek and Pescadero, between Gazos Creek and Año Nuevo, and between Pescadero and Pomponio beaches. Other sites, checked one to four times, that produced no plovers were Thornton, Montara, Moss, Pillar Point, Tunitas Creek, Fiddlers Cove, and Bean Hollow beaches.

Santa Cruz County: Forty-five percent of the 68-km shoreline of Santa Cruz County is sandy beach. We estimated 202 wintering plovers at nine sites (Table 1); the Pajaro River mouth is clearly the most important of these. The birds at Sunset Beach were part of the Pajaro River mouth population. The Pajaro River mouth was frequently visited by birds from as far north as Wilder Beach and infrequently visited by birds from as far south as the Salinas River. Birds at Wilder Creek, Seabright State Beach, and the San Lorenzo River mouth were largely the same individuals. Color-banded birds also moved between Scott and Waddell creeks and between Scott and Laguna creeks. Santa Cruz sites used only by wintering birds were Scott Creek, Davenport Beach, Seabright State Beach, and the San Lorenzo River mouth. Davenport Beach and the San Lorenzo River mouth received only incidental winter use (Table 1). Several sites were checked regularly and produced no plovers: Yellowbank Creek, Majors Creek, Younger Lagoon, Natural Bridges (each 23 to 29 surveys over 3 to 5 years), and Moran/Corcoran Lagoons Beach (81 surveys over 6 years). Sites, surveyed once or twice a winter, that held no birds were Greyhound Rock and Baldwin Creek (each 1 year), Twin Lakes State Beach, (3 years), Capitola Beach (5 years), and New Brighton Beach (4 years).

Monterey County: We estimate 337 wintering Snowy Plovers (Table 1) along the 22% of Monterey County's 179-km shoreline that is sandy beach. Except for birds at Point Sur, all the wintering plovers in Monterey County are on or close to Monterey Bay. The major roosting sites are Moss Landing (both in the salt ponds and at Jetty Road), the Salinas River mouth, Marina Beach, Del Monte Beach, Asilomar Beach, and the Carmel River mouth. We found little evidence that wintering Snowy Plovers used the salt

evaporators at Moss Landing until 1982 when some levees broke and the evaporators were subjected to tidal action. Subsequently, wintering plovers have occurred there regularly. Birds from as far north as Wilder Beach and as far south as Marina Beach intermittently moved from their usual roosting sites to the salt ponds. Since 1983 there has been a regular movement of birds between the Pajaro River mouth and the salt ponds. Snowy Plovers breed at all sites listed in Table 1 except for Del Monte Beach, Asilomar Beach, and the Carmel River mouth. The Little Sur River mouth, near Point Sur, was not found to hold plovers on five checks made over four years.

San Luis Obispo County: We estimated 398 wintering Snowy Plovers (Table 1) along the 53 km of sandy beach in this county with 150 km of coastline. The plovers occurred at several pocket beaches north of Morro Bay, but the major concentrations were at Morro Bay and at the Nipomo Dunes, including the Santa Maria River mouth. Cayucos Creek received only incidental plover use (Table 1). For the area from San Carpoforio Creek to Morro Bay sandspit, we recorded movements of color-banded birds between San Carpoforio and Arroyo Laguna Creek, San Carpoforio and San Simeon State Beach, San Carpoforio and Atascadero, Arroyo Laguna Beach and San Simeon, Arroyo Laguna Creek and Atascadero, San Simeon State Beach and Atascadero, Cayucos Creek and Atascadero, and Atascadero and the Morro Bay spit. At the Nipomo Dunes we found that marked birds moved between Pismo Beach and the Santa Maria River mouth. Many of the pocket beaches with wintering birds between San Carpoforio and Cayucos creeks are not Snowy Plover breeding sites. Breeding occurs mainly in the Morro Bay and Nipomo Dune areas (Page and Stenzel 1981). Beaches at Arroyo Honda, San Simeon Bay, Little Pico Creek, Leffingwell Landing, Old Creek, and Port San Luis were each checked once and Santa Rosa Creek Beach was checked 7 times, but no wintering plovers were found.

Santa Barbara County: We estimate 329 wintering plovers for this county (Table 1), which has 177 km of coastline and 140 km of sand beach. Surveys of all Santa Barbara sites, except Carpenteria State Beach, in November 1984 and February 1986 produced counts of 242 and 340 birds, respectively. The major concentrations of wintering birds were at Purisima Point Beach (reported as Shuman Creek north, San Antonio Creek north, and Purisima Point north in Table 1), at the Santa Ynez River mouth, and at Devereaux Beach. Marked Snowy Plovers moved between Devereaux and Goleta beaches; it is likely that there is interchange between these areas and Santa Barbara Harbor as well. Sites used by wintering but not by breeding birds include Jalama Beach, Goleta Beach, Santa Barbara Harbor, and Carpenteria State Beach. Beaches at Gaviota, Refugio, El Capitan, and Leadbetter were also surveyed once or twice, but no plovers were found.

Ventura County: Ninety-nine percent of the 66-km Ventura County shoreline is sand beach, holding an estimated 210 wintering Snowy Plovers (Table 1). Our November 1984 survey of all sites except San Buenaventura Beach (28 of the 210 birds) produced 171 Snowy Plovers. The main concentrations of wintering and breeding birds (Page and Stenzel 1981) are at Mugu Lagoon and Ormond Beach, which are contiguous. The Santa Clara River mouth and San Buenaventura Beach are also contiguous and probably

have an interchange of birds. Beaches at Solimar and Port Hueneme were surveyed once, and Emma K. Wood State Beach 5 times, but no plovers were found.

Los Angeles County: Sand beach occurs along 68% of the 119-km Los Angeles County shoreline. We estimated a winter population of 105 birds (Table 1) but found only 58 birds on our November 1984 survey. Although we list birds at seven sites, Malibu Lagoon and Corral beaches are contiguous as are the last four Los Angeles County sites in Table 1. Thus wintering Snowy Plover areas in Los Angeles County are more accurately considered as three: Zuma Beach, Corral Beach to Malibu Lagoon, and Santa Monica to Torrance beaches. We have no information on winter movement of plovers among these areas. Single surveys of beaches at Long Beach and Bluff Cove yielded no plovers.

Orange County: Eighty percent of Orange County's 68-km shoreline is sand beach, with an estimated 27 winterers (Table 1). Our November 1984 survey tallied 38 birds, mainly at Crystal Cove, Doheny State Beach, and Bolsa Chica. Bolsa Chica, Huntington, Balboa, and Newport beaches are contiguous and probably have an interchange of birds. Of the areas with wintering birds only Bolsa Chica is also used by breeders (Page and Stenzel 1981). Four to five censuses each at Seal Beach, Upper Newport Bay, and Laguna Beach yielded no plovers.

San Diego County: San Diego County has 122 km of shoreline, 83% of which is sand beach. We estimate 346 wintering birds for the county (Table 1), as compared to 257 winterers on our November 1984 survey. We have no estimate for the Western Salt Works, which had 31 breeding birds in 1978 (Page and Stenzel 1981) and for which there is one winter specimen dated 13 January 1968 in the San Diego Natural History Museum. Our survey team found 21 plovers at Las Flores Creek mouth at Camp Pendleton on 29 November 1984, but no plovers were found on a single survey done the previous winter. One banded bird was seen at Silver Strand and at the San Dieguito River estuary during the 1982 winter, and at San Dieguito and Los Penasquitos lagoons during the 1983 winter. We have no other information on the movement of birds in San Diego County. The beach at Buena Vista Lagoon was surveyed 7 times over 2 winters and yielded no plovers. Sites surveyed 1 to 4 times that held no plovers include Aliso Canyon mouth, Carlsbad Beach, Whale Point, La Jolla Beach, Mission Beach, and Point Loma.

San Francisco Bay

Snowy Plovers have wintered on San Francisco Bay since at least the late 1800s, as evidenced by specimens dated 25 December 1893 (1) and 14 December 1898 (3) in the California Academy of Sciences. Our survey coverage of the extensive and virtually inaccessible privately owned salt evaporators on south San Francisco Bay was limited and undoubtedly resulted in an underestimate of current winter numbers. Our winter population estimate of 153 birds (Table 3) compares with breeding-period estimates of 351 birds in 1978 (Henderson and Page 1981) and 270 in 1984 (Point Reyes Bird Observatory [PRBO] unpubl. data). The only winter area covered regularly was Alameda South Shore, where there are records of

Table 3. Summary of winter Snowy Plover counts in San Francisco Bay.

Site	Years[a]	Counts[b]	Yearly maximum numbers[c]
Alameda South Shore	6 (6)	63 (32)	33 (21-58)
Hayward Shoreline Park	2 (2)	7 (2)	4 (1-7)
W of Baumberg salt evaporators	3 (3)	3 (3)	61 (42-87)
Coyote Hills to Hetch Hetchy Aqueduct salt evaporators	3 (3)	17 (15)	5 (1-28)
Hetch Hetchy Aqueduct to Coyote Creek salt evaporators	2 (2)	8 (6)	36 (7-66)
Foster City area salt evaporators	3 (2)	4 (4)	5 (0-33)
Redwood Cr. to Steinberger Slough	4 (2)	9 (6)	9 (0-38)

[a] Numbers in parentheses are numbers of years in which plovers were found.
[b] Numbers in parentheses are numbers of counts on which plovers were found.
[c] Numbers are grand medians; numbers in parentheses are range of medians.

Snowy Plovers dating back to at least 1962 (ABN). Our high count for this area was 58 birds (Table 3); however, there is a report from there of 100 Snowy Plovers on 24 February 1964 (ABN). Elsewhere in San Francisco Bay most wintering Snowy Plovers were found at salt evaporators. The largest concentration was west of Baumberg, which had a high count of 87. birds (Table 3). Larger numbers of Snowy Plovers were reported here during and after our surveys. On 14 February 1980 there were at least 100 birds (ABN), on the Hayward-Fremont CBC, 23 December 1985, 113 birds (ABN), and on 22 February 1986, 332 birds (H. Cogswell pers. comm.). We did not survey Oakland International Airport, where there were 30 Snowy Plovers on 18 December 1983 (ABN), or San Pablo Bay, where eight were reported on 3 February 1983 at Point Pinole, Contra Costa County (R. Erickson pers. comm.). On the basis of currently available information, we suspect the wintering plover population of San Francisco Bay to be 350 to 500 birds.

The Channel Islands

Spear (1981) estimated at least 260 breeders on San Nicolas, San Miguel, and Santa Rosa islands combined, from censuses conducted between 1978 and 1980. Snowy Plovers winter on all of these as well as on San Clemente, Santa Catalina, and Santa Cruz islands. L. Jones (in litt.) describes the Snowy Plover as common on San Nicolas Island in the winter. He noted monthly peaks of 46 birds on 10 February 1974, 33 on 17 November 1976, 39 on 11 December 1977, and 49 on 14 January 1977. Additionally we have censuses for Jetty and Daytona beaches of 14 birds on 22 December 1976, 17 on 15 January 1977, and 15 on 12 February 1977, and for Dutch Harbor of 14 birds on 26 February 1984. We have no records for San Miguel Island but agree with L. Jones (in litt.) that this is undoubtedly due to the lack of winter visits by ornithologists. Monthly peaks for Santa Rosa Island of 40

birds on 12 December 1973, 1 on 23 February 1976, 10-15 on 8 November 1976, and 1 on 25 January 1977 were reported by L. Jones (in litt.). For San Clemente Island, Jones (in litt.) has records of 10 birds on 8 December 1976 and 1 on 16 December 1976. There are additional records of single birds at Horse Beach on 16 December 1972 and 3 January 1980, 3 birds at Northwest Harbor on 9 November 1975, 6 birds at Pyramid Cove on 10 November 1975, and 2-23 (median = 15) birds at West Cove on nine dates between 7 January 1976 and 21 January 1981 (L. Salata in litt.). The only records for Santa Catalina Island are of 1 bird on 1 January 1975, 8 on 28 February 1976, and 8 on 23 November 1976 (L. Jones in litt.). L. Jones' (in litt.) monthly high counts for Santa Cruz Island were 33 birds on 9 November 1975, 40 on 7 December 1975, 11 on 18 January 1976, and 18 on 22 February 1976. We have additional records of 3 birds at Fraser Point on 21 December 1976 and, for beaches on the southwest portion of the island, 21 birds on 25 January 1977 and 28 birds on 20 February 1977 (PRBO unpubl. data). If the ratio of winterers to breeders on the Channel Islands is similar to that on the mainland coast nearby, there could be up to (2.63 × 260 =) 684 Snowy Plovers wintering on the Channel Islands; however, given the low numbers reported above (under 240, total), it is likely that many fewer than this number winter there.

The Interior of California

The only confirmed, regularly used, interior wintering area is the Salton Sea. However, Snowy Plovers probably winter regularly now in the newly created irrigation-runoff evaporation ponds on the former Tulare Lake bed, 30 km south of Corcoran, Kings County.

Up to 37 Snowy Plovers have been recorded on Salton Sea CBCs since 1968. Our surveys located 1-6 Snowy Plovers at Salt Creek on six dates between 12 Janaury and 5 February from 1980 to 1983, 8 at Niland Marina on 19 December 1979, 12 at the south end of the Salton Sea on 18 December 1979, 8 at the end of Poe Road on 18 January 1982, and 15 along the Salton City shore on 19 December 1979. These sites supported 112 of the 226 breeders found by Henderson in the 1978 survey (Page and Stenzel 1981). At one additional site, Red Hill Marina near the Alamo River mouth, two surveys done in January 1985 turned up no birds. Although we currently cannot estimate the size of the winter population, given the information obtained thus far, we believe that it is smaller than that of the breeding population.

In Kings County there were 3 birds in the South Wilbur Flood Area, Tulare Lake, on 10 January 1980 (ABN). H. Coe (in litt.) found up to 36 Snowy Plovers on 18 censuses of varying areas of the irrigation-runoff ponds at Tulare Lake during the 1983 winter. The ponds were constructed between 1980 and 1983; up to 126 adult-sized birds were found there during the summer of 1982 (Ivey 1984). It is likely Snowy Plovers now winter regularly at the evaporation ponds but more data are needed to confirm this. The only other winter records from this area are two birds at Tulare Lake on 1 November 1983 (ABN), one bird on the old lake bed on the Creighton Ranch-Corcoran CBC, 29 December 1985 (R. Hansen pers. comm.), and eight birds in the Tulare Lake basin on 22 December 1985 (ABN).

Elsewhere in the California interior the Snowy Plover is currently known as only an irregular winterer; however, most potential inland sites are seldom visited by observers in winter. In Los Angeles County there are winter records of 1 bird at the Lancaster Sewage Ponds from December 1981 through February 1982 (McCaskie 1982), and at Rosamond Lake of 26 birds on 17 December 1983 and 2 birds on 15 December 1984 (F. Heath in litt.). All these birds were located on Lancaster CBCs, which commenced in 1979. There are four winter records for Owens Lake, Inyo County: 1 bird on 27 December 1890 (Fisher 1893), 2 birds on 3 January 1975 (McCaskie 1975), 2 birds on 11 Janaury 1976 (T. Heindel in litt.), and 1 bird on the Lone Pine CBC, 15 December 1984 (D. Gaines pers comm.). Further survey of Rosamond and Owens lakes specifically for Snowy Plovers might show that they winter there more regularly than current records indicate. Other interior records are from El Dorado County, Lake Tahoe, 1 bird on 11 and 12 November 1961 (McCaskie in litt.); Merced County, Volta, 1 bird on 17 February 1965 (Chase 1965); Kern County, Lake Isabella, 1 bird on 25 January 1985 (McCaskie 1985); San Bernardino County, East Cronese Lake, 1 bird on 19 November 1978 (McCaskie 1979); Riverside County, Lake Elsinore, 6 birds on 11 December 1981 (D. Willick in litt.) and 10 birds on 30 January 1982 (McCaskie 1982); and San Diego County, Lake Henshaw, 1 bird on 5 November 1978 (McCaskie 1979), and Lake Hodges, 2-3 birds during the 1979-80 winter (Garrett and Dunn 1981) and 2 birds on 6 November 1982 (PRBO unpubl. data). Unitt (1984) considered the 5 November Lake Henshaw bird to be a migrant, as may be true of the other early November sightings.

We suspect that at most 300 Snowy Plovers winter at the interior of California, mostly at the Salton Sea and in the San Joaquin Valley. A few other areas, such as Owens Lake and dry lakes in the Mohave Desert, may prove to have small but regular wintering populations; however, it appears that the Snowy Plover is an irregular winterer throughout most of the interior of the state.

Historical California Winter Population

We suspect that development and human recreation, by altering habitat quantity and quality, has reduced winter numbers of Snowy Plovers along the California coast within the past 100 years, as has been described for the breeding period (Page and Stenzel 1981). However, the historical data on winter numbers needed to test this hypothesis are insufficient.

We examined coastal Christmas Bird Counts made annually from 1962 to 1984 to detect any trends in winter numbers of Snowy Plovers during this period. For both northern and southern California CBCs we used the raw sums of the Snowy Plover totals to test the hypothesis of no change in winter numbers against an alternative hypothesis of a downward trend. The effect of a probable increase in area coverage (due to increased numbers of observers) over the 23-year period undoubtedly makes this a conservative test. In southern California, the Spearman rank correlation, -0.489, between number of plovers and year, is significantly less than 0 ($P = 0.019$), while in northern California the rank correlation, 0.152, is not significantly less than 0 ($P = 0.7623$) (Fig. 2). Many factors contribute to variability in these

Christmas Count totals, so this strong circumstantial evidence for a decrease in the size of the southern California winter population is particularly interesting. The quality of the habitat in winter might be diminished by direct disturbance factors such as heavy human use and indirect factors that could reduce food resources on beaches. During a survey of southern California beaches, D. Shuford (pers. comm.) noted that the daily mechanical raking of some beaches in winter effectively removed all wrack and thoroughly disturbed the upper layer of sand. It would be valuable to know the effect of this activity on the plovers' invertebrate prey.

We examined the locations of 103 museum specimens collected at 29 California sites during the winter between 1861 and 1978. During our 1979 to 1985 survey period, wintering Snowy Plovers were recorded at, or within a few kilometers of, all these locations. They were also recorded at, or within a few kilometers of, all locations confirmed as historical breeding areas by the presence of eggs in museum collections as recorded by Page and Stenzel (1981). Consequently we can report that Snowy Plovers winter at, or close to, all known areas of historical use. A decline, if it has occurred, must be manifested mostly by reduced numbers using particular coastline segments rather than by the elimination of all birds from formerly used wintering habitat.

Other Western States

Snowy Plovers winter in small numbers on the Oregon coast and sparingly along the lower Colorado and Gila rivers in Arizona. They are rare and irregular in winter in other western states. Winter surveys of plovers in coastal Oregon between 1979 and 1985 (Table 4) suggest that up to 100 birds winter in that state. The only interior Oregon winter record is of three birds seen by J. Scharff at Harney Lake on 27 February 1968 (G. Ivey in litt.); these may have been early spring arrivals. R. Widrig (in litt.) reports that wintering birds are rare in coastal Washington, where there are sightings of 1-9 birds at Leadbetter Point between 19 December 1978 and 26 February 1979. We are unaware of any winter records for interior Washington or Nevada. Breeding-population estimates for the same areas are: Washington coast, 32 (E. Cummins pers. comm.); Oregon coast, 84 (C. Bruce pers. comm.); Oregon interior, 1032 (Herman et al. 1981); and Nevada, 969 (Herman et al. 1981). Consequently only about 100 Snowy Plovers winter where the breeding population is estimated at 2117 birds.

In the Southwest, Snowy Plovers winter regularly but sparingly along the lower Colorado and Gila rivers (Monson and Phillips 1981). Additionally, there are Arizona winter records of a bird at Phoenix on the 28 December 1963 CBC, one to two at Tucson between 11 October and 3 December 1971 (Monson 1972), one at Lake Havasu on 20 January 1982 (Witzeman 1982), and one at Wilcox on 31 December 1976 (Witzeman et al. 1977). The only winter Snowy Plover records for New Mexico are 1 to 2 birds in the vicinity of Salt Lake, east of Loving, from 9 to 27 January 1975 (Witzeman et al. 1975), a single bird at Laguna Grande on 28 December 1976 (Witzeman et al. 1977), and one at Hollomon Lakes, Otero Co., on 23 February 1985 (Hubbard 1985). Twenty individuals at Bitter Lake National Wildlife Refuge until at least 2 November 1973 (Parker 1974) were likely late

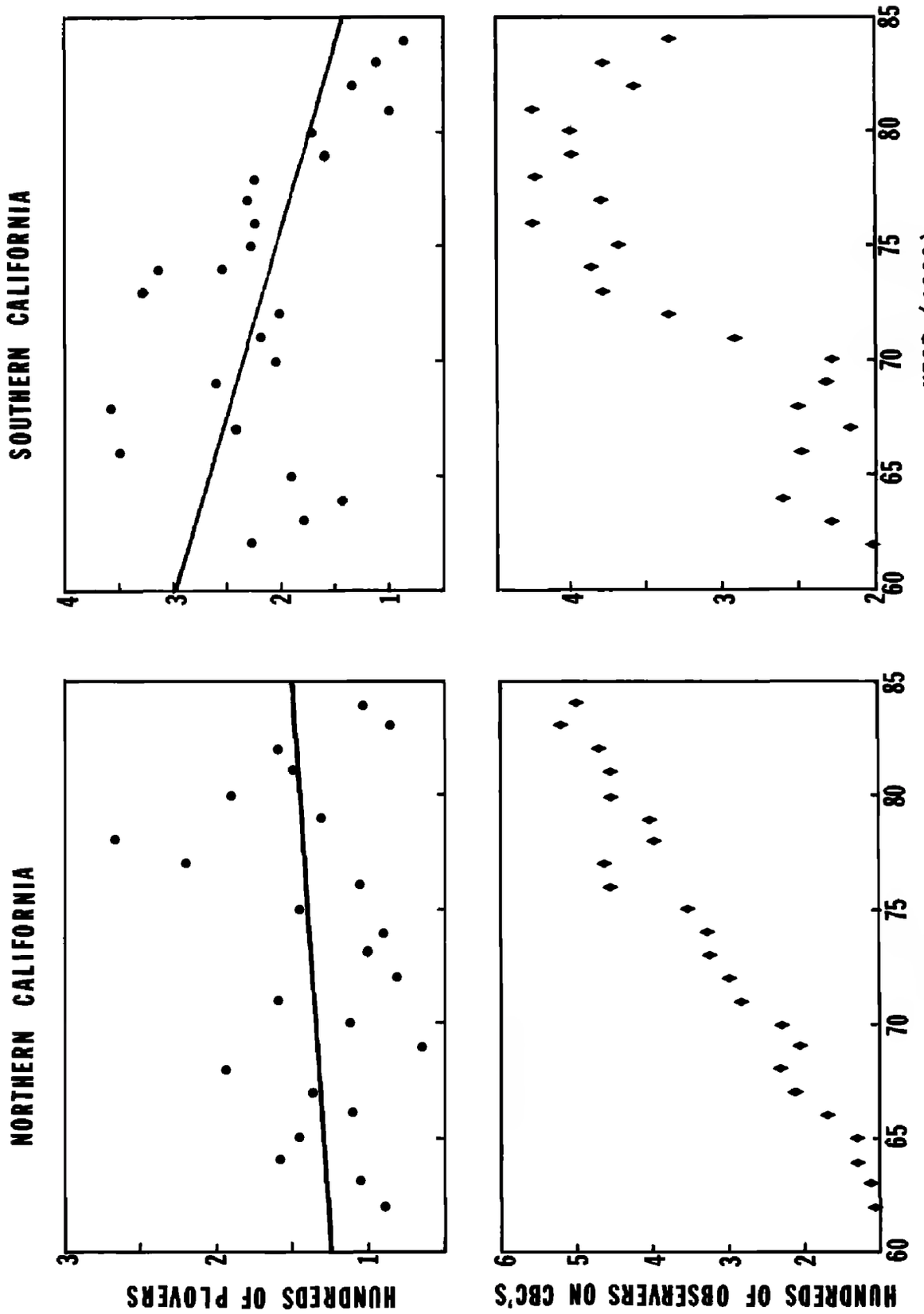

Figure 2. Total numbers of Snowy Plovers, above, and observers, below, on California Christmas Bird Counts, 1962-1984. Northern California counts are Centerville Beach, Crystal Springs Reservoir, Palo Alto, San Jose, Monterey Peninsula, and Morro Bay. Southern California counts are Santa Barbara, Los Angeles, coastal Orange County, Oceanside-Vista-Carlsbad, and San Diego. Weighted least squares regression lines of Snowy Plover number on year (weights proportional to number of observers) are shown for reference.

Table 4. Number of Snowy Plovers at coastal Oregon sites during five winters.

Site	1979	1983	1984	1985	1986
Clatsop County					
Clatsop Beaches	—	0	0	1	0
Tillamook County					
Nehalem Spit	—	2	—	0	0
Bayocean Spit	—	10	10	11	13
Sand Lake Spits	—	7	0	0	0
Lane County					
Sutton Beach	30	28	5	24	11
Siltcoos River area	6	0	0	12	13
Douglas County					
Umpqua River area	10	4	12	0	0
Coos County					
Horsfall Beach	—	0	3	0	0
Coos Bay Area	42	12	0	9	18
New River area	6	13	13	8	17
Curry County					
Euchre Creek	8	2	0	1	0
TOTALS	102	78	43	66	72

migrants. A specimen labeled Roswell Lake, December 1925, which was questioned by Hubbard (1970), may be valid in light of the other recent winter records from New Mexico.

Baja California and Mainland Mexico

Wilbur (1987) described the Snowy Plover as a common resident locally on sandy beaches of both coasts of Baja California. He speculates that it may occur more widely in winter than in summer. We confirm that wintering Snowy Plovers occur in widely separate locations along both Baja coastlines (Table 5). Application of our methods to Wilbur's data and to sightings reported to us from 1979 to 1985 produced a winter estimate of 397 birds (Table 5), but this probably represents a small proportion of the actual numbers because most winter records resulted from casual observations rather than directed surveys. Additionally, the records are few and represent only a small fraction of the extensive potential habitat. We suspect the number of Snowy Plovers wintering in Baja California approaches or exceeds the number in Upper California.

On the eastern shore of the Gulf of California a sizable Snowy Plover population winters at Puerto Peñasco. Five Puerto Peñasco CBCs during our survey years had 48 to 252 (median = 243) birds. Wintering Snowy Plovers occur along the same coastline at least as far south as San Blas, where six

Table 5. Counts of wintering Snowy Plovers in Baja California, 1978-1985.[a]

Site	Years[b]	Counts[c]	Yearly maximum numbers[d]
Pacific Coast			
Rosarito Beach	3 (2)	4 (3)	2 (0-8)
Las Gaviotas	1 (1)	1 (1)	8
La Salina	1 (1)	2 (2)	47
Bahia de Todos Santos	2 (2)	3 (3)	96 (8-184)
Isla San Martin	4 (3)	9 (8)	4 (0-10)
San Quintin area	3 (3)	5 (5)	19 (5-222)
Laguna Manuela	3 (3)	8 (8)	22 (18-31)
Laguna Manuela Island	1 (1)	1 (1)	28
Estero de San Jose	1 (1)	1 (1)	19
Guerrero Negro	3 (3)	3 (3)	4 (3-8)
San Ignacio Lagoon	5 (5)	6 (6)	37 (17-45)
Magdalena Bay	6 (6)	12 (12)	44 (5-75)
Punta Marques	1 (1)	1 (1)	11
Cabo San Lucas	3 (3)	4 (3)	3 (1-3)
Gulf Coast			
Bahia de Pescadero	2 (2)	2 (2)	16 (12-20)
Punta Chivata	3 (3)	3 (3)	10 (3-15)
Bahia Concepcion	1 (1)	1 (1)	1
El Requesion	1 (1)	1 (1)	3
Rancho Liqui	1 (1)	1 (1)	3
San Jose Del Cabo	1 (1)	1 (1)	20

[a] Data from our surveys and Wilbur (1987).
[b] Numbers in parentheses are numbers of years in which plovers were found.
[c] Numbers in parentheses are numbers of counts on which plovers were found.
[d] Numbers are grand medians; numbers in parentheses are range of medians.

CBCs during our survey period reported 1 to 33 (median = 17) birds. We are uncertain about the winter status of Snowy Plovers in the remainder of Mexico, especially in regard to race and origin. Birds wintering in eastern Mexico likely are probably of the paler race *C.a. tenuirostris*, which occurs from the southern Great Plains and Gulf of Mexico coast through the West Indies to northern South America (Johnsgard 1981). The validity of the distinction between *nivosus* and *tenuirostris* has been disputed (e.g., Blake 1977).

Population Shifts between Breeding and Wintering Grounds

We found only a few hundred Snowy Plovers wintering in the interior of the western states in contrast to recent counts of 3844 breeders in interior California, Oregon and Nevada (Page and Stenzel 1981, Herman et al. 1981). Our surveys revealed 6 of 86 females but none of 44 male breeders color-banded at Mono Lake, Mono County, wintering on the California coast. One female was sighted on 15 dates between 9 September 1981 and 25 March 1982, and on 13 dates between 14 September 1982 and 23

March 1983 at Del Monte Beach, Monterey Bay. Two breeding females from Mono Lake wintered at Devereaux and Goleta beaches in Santa Barbara County. One was seen at Devereaux Beach on four dates between 27 November 1981 and 20 March 1982, and on seven dates between 6 August 1982 and 6 November 1982. The other bird was sighted at both Goleta and Devereaux beaches 21 times over dates spanning five winters from 1981 to 1985. One female from Mono Lake was encountered during four winters (1979-1982) and another during two (1981 and 1982) at Malibu Lagoon, Los Angeles County. One other Mono Lake female was sighted during the winter of 1980-1981 and in the late fall of 1981 on San Clemente Island.

Birds marked as chicks at Mono Lake also were found on the coast between fall and spring. One was seen either at Pismo Beach or the Santa Maria River mouth on five dates between 14 December 1979 and 25 February 1980, one at Purisima Point Beach, Vandenberg Air Force Base, on 5 January 1983 and 14 November 1984, another at Purisima Point Beach on 20 April 1982 and 19 January 1983, and one at Atascadero Beach on four dates between 5 September and 25 November 1982 and on 8 and 13 September 1983. One was seen in Baja California at Magdalena Bay on 31 January 1984. These results verify that many birds breeding in interior western North America migrate to coastal sites for the winter.

Some coastal birds also are migratory. In Oregon several adults color-banded on nests in 1978 were relocated near their nesting site during winter in 1979 (Wilson-Jacobs pers. comm.). However, two males that bred near Newport, Oregon, spent the winter in the Point Reyes area in 1978 and 1979. Those plovers that migrate from Monterey Bay breeding sites for winter may go either north or south. Breeders from Monterey Bay have wintered as far north as Humboldt Bay in northern California and as far south as San Quintin Bay in Baja California. These results, too extensive to report here, are the subject of continuing analysis.

Comparison of Wintering and Breeding Numbers in the West

Warriner et al. (1986) found that Snowy Plovers fledged at least 0.8 to 0.9 young per female over a six-year period; therefore in early winter there could be $0.8N$ (where N = number of female breeders) more birds than in the preceding summer. Males outnumber females by as much as 1.4:1.0 in the breeding population and, at least in the interior, are more readily detected on censuses than females (Warriner et al. 1986). Both in the interior and on the coast raw survey data likely underestimate population size (Page and Stenzel 1981, Warriner et al. 1986). We use data available in the two publications listed above to estimate the potential sizes of breeding and wintering Snowy Plover populations in the western United States. These estimates exclude Utah, which may contribute a significant number of additional birds, and New Mexico and Arizona, with relatively small numbers; suitable data are unavailable for these states.

Recent breeding-season surveys for coastal Washington, Oregon, and California (including San Francisco Bay) totaled 1682 Snowy Plovers (Page and Stenzel 1981, C. Bruce pers. comm.). This could be an undercount by as much as 28% (Page and Stenzel 1981). Consequently, the coastal breeding population might reach $(100/72 \times 1682) = 2336$ birds and the

winter population (2336 + 2336 × (1/2.4 × 0.8)) = 3115 birds (including first-year birds).

As noted above, breeding surveys for interior Oregon, Nevada and California totaled 3844 birds. At Mono Lake, one of several major breeding sites, a typical census detected only 1 marked male for every 1.643 known to be present and 1 female for every 3.010 present (Warriner et al. 1986). If these rates are characteristic of the interior as a whole, the size N of the female breeding population may be estimated from

$$N/3.010 + 1.4N/1.643 = 3844,$$

giving $N = 3246$. So the size of the male population is $1.4\,N = 4544$, for a total breeding population of 7790 birds. We exclude from this estimate a few hundred Snowy Plovers that have colonized agricultural drainage ponds in the Tulare Lake basin since the statewide surveys (Ivey 1984, Campbell et al. 1985) on the assumption that these birds are immigrants from other localities rather than an added component to the existing population. The early winter population is, then, estimated at 7790 + (3246 × 0.8) = 10,387 birds (including first-year birds, assuming reproductive rates similar to those along the coast). Coastal and interior estimates combined give a potential breeding population as high as 10,126 birds and a wintering population as high as 13,502 birds.

Allowing 100 wintering Snowy Plovers for coastal Oregon, 2500 for coastal California, up to 500 for San Francisco Bay, and up to 900 for the Channel Islands, the California interior, and the remaining western states combined, we account for only 4000 Snowy Plovers. Even with rather severe mortality between the breeding season and winter, a substantial proportion of the estimated wintering population is unaccounted for in our surveys.

Many breeders and their progeny apparently winter farther south in Baja California and other parts of Mexico, despite the failure of limited recent fieldwork there to reveal substantial numbers of wintering plovers. This speculation is supported by the discovery of a few marked birds in Baja California and the disappearance of many marked coastal breeders for the winter. During 1984 and 1985, 78 marked males and 85 females bred on Monterey Bay. Forty-one percent of the males and 51.8% of the females were residents; the remainder migrated from the area for the winter. We located 41.5% of the migrant females and 10.9% of the migrant males wintering in coastal California and 2 males, representing 4.3% of the migrants, in Baja. Given the extensive coverage of our coastal survey in California, we believe that most color-marked plovers were not missed there, but were in Mexico, where survey coverage was minimal.

SUMMARY

The size of the Snowy Plover population in western North America (except Utah) at the end of the breeding season is estimated at approximately 13,500, including breeders and juvenals. Surveys of mainland coastal sites in California (including San Francisco Bay) and Oregon between November and February, 1979 to 1985, suggest that approximately 3100 plovers

winter there. Most of the major concentrations were found from the Bodega Harbor, Sonoma County, south. Up to 900 plovers may also winter in interior California, on the Channel Islands, and in other western states; this liberal estimate is based on surveys of a few interior areas, incidental sightings, and the summer-to-winter population ratio of the mainland coast applied to the islands. These findings suggest that the majority of the plovers west of the Rocky Mountains winter on the Gulf of California and the west coast of Baja California, where our surveys of a few sites, and two Christmas Bird Counts, turned up about 657 plovers. The most important sites in coastal California were spits and dune-backed beaches, particularly at river and creek mouths, although many areas of wide sand beach were used. There is some evidence of a decline in the size of the southern California wintering population since 1961.

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THE AVIFAUNA OF APACHE COUNTY, ARIZONA

GARY H. ROSENBERG, Museum of Natural Science, Louisiana State University, Baton Rouge, Louisiana 70803

SCOTT B. TERRILL, Department of Biological Sciences, State University of New York at Albany, 1400 Washington Ave., Albany, New York 12222

In general, the distribution and the seasonal status of the avifauna of Arizona are fairly well understood. *The Birds of Arizona* (Phillips et al. 1964) encompasses the entire state and is fairly complete for all seasons. Large sections of the state, however, have received relatively little ornithological coverage. The entire region of Apache County in northeastern Arizona is one such area. Even though this area is quite interesting ornithologically, before 1976 it received little coverage relative to the many popular birding "hot spots" in other sections of the state. It is possible to assemble a list of those species that breed in Apache County using Phillips et al. (1964), its revision by Monson and Phillips (1981), and several detailed studies (e.g. Carothers et al. 1973, Franzreb 1975). Yet there remain substantial gaps in our knowledge of migrant, wintering, and some nesting species found in Apache County.

Since the mid-1970s, primarily as a result of the "vagrant hunting" boom that swept parts of the West, Apache County has been visited repeatedly during all seasons. A significant increase in knowledge of the status and distribution of birds in northeastern Arizona has resulted. This paper emphasizes the diversity and ornithological uniqueness of Apache County and summarizes the status of the birds found there.

Apache County covers an area of approximately 15,000 km^2 in the northeastern corner of Arizona. It extends from the White Mountains in the south to the Utah border in the north. The entire eastern border is shared with New Mexico and the county extends about 85 km to its western border shared with Navajo County. Much of the area of Apache County is part of the Navajo Indian Reservation. The elevations range from 1689 m along the Little Colorado River to 3476 m at the summit of Mt. Baldy in the White Mountains. The climate is similar to that of the Great Basin Desert: hot and dry in the summer, cold and wet in the winter. The higher mountainous areas within the county are generally snow-covered from November to April, and sometimes well into May.

HABITATS

Vegetational associations found in the county are very diverse, ranging from sage-dominated grassland in the northern portion up through pinyon-juniper forests, to spruce-fir-aspen forest at the higher elevations. We have divided the environment of Apache County into seven arbitrarily defined categories, mostly on the basis of vegetational association. These categories are labeled according to the dominant perennial plant species found in a given association or for some common feature or features we consider biologically appropriate to the discussion of the distribution of birds in this area.

1. *Spruce-Fir-Aspen*. This association encompasses most of the area located at high elevations in the White and Chuska mountains. The White Mts. reach an elevation of 3476 m at the summit of Mt. Baldy, which is one of only two mountains in Arizona that rise above timberline. The dominant tree species found here are Englemann Spruce (*Picea englemanni*), White Fir (*Abies concolor*) and Quaking Aspen (*Populus tremuloides*). There are numerous grassy meadows with streams bordered primarily by Bebb Willows (*Salix bebbiana*) and Thinleaf Alders (*Alnus tenuifolia*). There are many small, and several large, lakes within this elevational range. Most high elevation habitat within Apache Co. is restricted to the White Mts., but a small patch is found in the Chuska Mts. in the northeast section of the county. These mountains are poorly known ornithologically, and, because of their close proximity to the Rocky Mountains in northern New Mexico and southern Colorado, may resemble them more closely than other ranges in Arizona. A recent summer trip to the Chuska Mts. revealed several new local records including a new breeding species for Arizona, the Hammond's Flycatcher. No winter data are yet available for this area.

2. *Ponderosa Pine*. This association covers the area in elevation immediately below the spruce-fir-aspen habitat. The dominant tree species in this habitat is Ponderosa Pine (*Pinus ponderosa*), but Douglas-fir (*Pseudotsuga menziesii*) stands are quite prevalent in the wetter drainages. Large expanses in both the White Mountains and the Chuska Mountains are monotypic Ponderosa Pine forests. A pine forest located in the Carrizo Mountains in the extreme northeast corner of Apache County has been visited only once or twice, yet the close proximity of these mountains to the mountains in southwestern Colorado makes them potentially very interesting.

3. *Pinyon-Juniper*. Below the Ponderosa Pine belt is the pinyon-juniper association, which is widespread throughout the county. The dominant tree species in this habitat are the Pinyon Pine (*Pinus edulis*), the Utah Juniper (*Juniperus osteosperma*) and the One-seed Juniper (*J. monosperma*). This habitat has a relatively limited breeding avifauna similar to that of other pinyon-juniper forests in Arizona. Even though this habitat probably covers most of the forested area in the county, it receives relatively little coverage.

4. *Riparian Woodland, Rivers and Streams*. These habitats are very important to many nesting, wintering and especially migrant bird populations in Apache County. The county is arid, with perennial water restricted to those rivers and streams draining the White and Chuska mountains. The Little Colorado River is the main northern drainage for the White Mountains and, along with its tributaries, accounts for most of the perennial water found in the county. Dominant plant species are the Narrowleaf Willow (*Salix exigua*), the Thinleaf Alder (*Alnus tenuifolia*) and the American Dogwood (*Cornus stolonifera*). Narrowleaf Cottonwoods (*Populus angustifolia*) are also found commonly along some of the larger streams. The most highly visited locality in Apache County (and probably the best known ornithologically) is a section of willow-alder-dogwood riparian woodland along the Little Colorado River at its confluence with the South Fork of the Little Colorado River (hereafter referred to as South Fork). Here the breeding grounds for several more typically "eastern" species, including Veery and American Redstart, reach their southwestern limit. This locality is excellent for migrants during the spring and fall, and especially good for eastern "vagrants." For example, Kentucky Warbler, Worm-eating Warbler, Yellow-throated Warbler and Swainson's Warbler were all found in the same group of trees within a few-week period in spring 1981. Migrants are, in general, highly concentrated around water and its associated vegetation throughout the county.

5. *Grassland and Rocky Cliffs*. This broadly defined category includes the vast majority of the area in Apache County. Most of the land is heavily eroded, overgrazed grassland and is dominated by the shrub Big Sagebrush (*Artemisia tridentata*) in the north. This habitat is somewhat depauperate for birds; however, winter raptor populations can be quite high.

6. *Lakes, Reservoirs, Sewage Ponds and Marsh.* Apache County contains several small lakes and reservoirs which provide excellent nesting habitat for ducks. Additionally, many species of migrating shorebirds and waterbirds frequent these areas. Many lakes, such as Ganado Lake, have restricted hunting on them and can potentially support large numbers of wintering ducks. Most of the higher elevation lakes, where many of the nesting species of ducks occur, are frozen over during most winters. Lower elevation lakes are irregularly open during the winter. The many sewage ponds throughout the county are particularly good for migrating shorebirds. The American Avocet has recently nested on several of these sewage ponds, providing new breeding localities for Arizona (Witzeman 1982).

7. *Oases, Towns and Agricultural Land.* This catch-all category refers to most of the habitats, such as rows of planted trees and agricultural areas, that appear as lush oases in an extremely arid landscape. These habitats may be somewhat marginal for breeding birds, but their value to migrants is extremely high. Disturbed, wet, grassy fields in the Springerville region serve as the only nesting habitat in Arizona for Bobolink, Common Snipe and possibly Wilson's Phalarope. These oases range in size from a small clump of salt cedars (*Tamarix*) around a sewage pond at Tez Nez Iah to the entire towns of Ganado and Springerville.

OCCURRENCE BY HABITAT TYPE

The occurrence of birds in each habitat type during each season was determined using *The Birds of Arizona* (Phillips et al. 1964), *An Annotated Checklist of the Birds of Arizona* (Monson and Phillips 1981), *American Birds* (including *Audubon Field Notes*) and the field notes of many observers (Table 1). Seasons are defined as follows: winter = December through March, spring = April through early June, summer = mid-June through mid-August, fall = mid-August through November. Also calculated are the number of residents and the number of "pure" transients for each habitat during each season (Table 1).

Table 1. Bird species occurrence in seven Apache Co. habitat types. These numbers were calculated from *The Birds of Arizona* (Phillips et al. 1964) and field notes of many observers including the authors. Each number represents the total number of species found within a particular habitat during a particular season. Numbers of permanent residents and pure transients were also calculated for each habitat type. The numbers should not be interpreted as absolute. They are useful as comparative values for detecting non-subtle trends.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Winter	27	35	31	39	38	30	63
Spring	42	63	63	97	51	63	121
Summer	51	58	37	53	35	27	25
Fall	43	66	66	105	54	87	149
Residents	19	21	15	12	14	6	12
Transients	5	8	7	26	7	49	57

(1) = Spruce-Fir-Aspen; (2) = Ponderosa Pine; (3) = Pinyon-Juniper; (4) = Riparian; (5) = Grassland; (6) = Lakes and Reservoirs; (7) = Oases and Agriculture

Approximately 328 species of birds have been recorded in Apache County, about 50 of which are considered permanent residents. During the summer season roughly 189 species have been recorded and at least 182 of these are known to have nested. During the winter season at least 128 species have been recorded. Approximately 112 migrant species are considered "pure" transients within Apache County and many of these are considered accidental.

In winter, habitats 4 (Riparian Woodland) and 7 (Oases and Agricultural Land) consistently support the most species. All habitats probably show high degrees of variability in species richness and abundance, not only between winters but within winters, due to climatic variability. Additionally, in some years the coniferous forests have a healthy cone crop and support large numbers of birds during the winter and in other years the cone crop may be relatively poor, resulting in few species using those habitats. Cone crops and seed crops at other locations farther north can also influence species occurrence in Apache County.

It is noteworthy that 70% of the winter species in habitat 1 (Spruce-Fir-Aspen Forest), 60% of the winter species in habitat 2 (Ponderosa Pine Forest) and 28% of the winter species in habitat 3 (Pinyon-Juniper Forest) are permanent residents. In habitats 4 (Riparian) and 7 (Towns, Agriculture), however, far fewer of the species recorded there in winter (20% and 16% respectively) are permanent residents. Christmas Bird Counts conducted in the Springerville-White Mountains region during 1978, 1979 and 1980 recorded 89, 91 and 91 species respectively. These are very high counts considering that the lowest elevation within the circle was 2130 m (7000 ft).

In spring and fall, habitats 4 and 7 again are the most important habitats for passerines. Of the approximately 105 "pure" transients recorded in Apache County, 48 are waterbirds and restricted to habitat 6 (Lakes and Reservoirs). Of the others, 57 species have occurred in habitat 7 and 26 have occurred in habitat 4, compared to 5, 8, 7 and 7 species in habitats 1, 2, 3 and 5, respectively. These values reflect the relative importance of these habitats to migrants. The low number of migrants recorded in the coniferous habitats (see Table 1) may be lower than reality due to the less overall coverage during the spring and fall seasons; nevertheless, not one "pure" transient has been found exclusively in the coniferous habitats.

Of the approximately 182 bird species that have nested in Apache County, fully *37* reach either a southwestern, southwestern interior or northeastern breeding limit in or around the region. The White Mountains and adjacent Mogollon Highlands of western New Mexico form a front of highlands that support extensive spruce-fir-aspen forests. It is along this front that the Rocky Mountains reach their southwest limit. Along with this southward extension of high montane habitat, *30* species reach their southwestern (SW) or southwestern interior (SWI) breeding range limit. Southwest interior is defined as the portion of the Southwest that lies east of California. These species are Blue Grouse (SW), Mountain Plover (SW), Common Snipe (SWI), Wilson's Phalarope (SW), Lewis' Woodpecker (SWI), Red-naped Sapsucker (SW), Williamson's Sapsucker (SWI), Downy Woodpecker (SWI), Three-toed Woodpecker (SW), Hammond's Flycatcher (SW), Tree Swallow (SWI), Gray Jay (SW), Black-billed Magpie (SW), Mountain

Bluebird (SW), Townsend's Solitare (SWI), Veery (SW), Swainson's Thrush (SWI), Gray Catbird (SW), Sage Thrasher (SW), Water Pipit (SW), American Redstart (SW), MacGillivray's Warbler (SW), Wilson's Warbler (SWI), Green-tailed Towhee (SWI) Vesper Sparrow (SWI), White-crowned Sparrow (SWI), Bobolink (SW), Pine Grosbeak (SW) and American Goldfinch (SWI).

Seven typically southeastern Arizona species reach their northeastern breeding limit in this region. These species are Montezuma Quail, Whip-poor-will (race *arizonae*), Greater Pewee, Phainopepla, Red-faced Warbler, Painted Redstart and Olive Warbler. It is interesting that several of these species are expanding their ranges to the northwest through isolated mountain ranges in northwest Arizona and southeast California; their expansion to the northeast appears to be limited by the Mogollon Plateau and the southern limit of the Rocky Mountains. The presence of both Mexican Plateau and Rocky Mountain species in the White Mountains is unique among the patterns of distribution of North American birds.

ANNOTATED LIST OF SELECTED SPECIES

The following is a list of those species that have occurred accidentally in Apache County through 1985. The species included in this list have been backed up either by specimens, by photographs, or by written details submitted to the Arizona Rare Bird Committee. All post-1976 records are still under review by the ARBC. Also included in this list are species of special note for distributional reasons. Nomenclature follows the AOU Check-list (6th edition).

Pacific Loon — One fall record: one on Becker Lake in Springerville 26 Nov 1981 (AB 36:204).

Horned Grebe — One fall record, one winter record: one at Sunrise Lake in the White Mts. 30 Oct 1984 (AB 39:86) and one at Round Rock 22 Mar 1985 (AB 39:333).

Clark's Grebe — One fall record: one at Ganado L. 7 Oct 1984 (AB 39:86). Although Western "dark-phased" Grebe is a common migrant on lakes in the county, little attention has been devoted in the past to distinguishing between the two types. This record represents the first definitive Clark's Grebe for Apache County.

Great Egret — One fall record: one at Ganado L. 5 Nov. 1984 (AB 39:86).

Cattle Egret — Two spring records, three fall records: One at Ganado 30 May 1979, one at Richville May 1981 (AB 35:850), 26 at Many Farms Lake 6 Nov 1984, 19 at Moaning Lake near Chinle 9 Nov 1984, 6 near Many Farms 13 Nov 1984 (all AB 39:86) and two at St. Johns 11 Aug 1985 (AB 40:150).

Wood Stork — One fall record: one near St. Johns 29 Aug 1934 (Phillips et al. 1964). A late summer, post-breeding wanderer into southwestern Arizona.

Greater White-fronted Goose — One fall record: a flock of six at Ganado L. 21 Sep 1985 (AB 40:150).

Wood Duck — One spring record, one fall record: one at Round Rock 14 Apr 1985 (AB 39:334) and one 10 mi. N Springerville 9 Aug 1984 (AB 39:86).

Eurasian Wigeon — One fall record: a male with over 1000 American Wigeon on Ganado L. 6 Oct 1979 (AB 34:188).

Surf Scoter — One fall record: one on Nelson Reservoir 12 Nov 1973 (Speich 1975).

White-winged Scoter — Two fall records: one on Nelson Reservoir 12 Nov 1974 and one there 24-26 Nov 1979 (AB 32:240).

Hooded Merganser — One fall record: one 28 Nov 1982 W of Springerville (AB 37:209).

Red-breasted Merganser — Two fall records: seven on Many Farms L. 2 Nov 1985 and one on Tsaile L. 10 Nov 1985 (AB 40:150).

Common Moorhen — One fall record: one at Becker L. in Springerville.

Sandhill Crane — Formerly an uncommon summer resident on the Apache Indian Reservation in the White Mts. (Phillips et al. 1964); one recent fall record at Many Farms L. 26 Oct 1985 (AB 40:151).

Mountain Plover — Status uncertain: suitable habitat for this grassland nesting species exists in the Springerville region where several flocks were observed in Aug 1914 (Phillips et al. 1964). Although these birds may have represented early migrants, this species was found nesting on the Arizona-New Mexico border only 37 km E of Springerville on 12 Jun 1978 (Johnson and Spicer 1981).

Lesser Golden-Plover — One fall record: one at Many Farms L. 14 Sep 1985 (AB 40:151).

Black-necked Stilt — One fall record: one at Ganado L. 30 Sep 1984 (AB 39:86).

American Avocet — A common migrant on lakes throughout the county; recently found nesting at sewage ponds at Petrified National Park and at Chinle (AB 36:1004).

Ruddy Turnstone — One spring record, two fall records: one seen during a violent storm at Ganado L. 20 May 1981 (AB 35:850), one at Tsaile L. 1-3 Sep 1985 and one at Round Rock L. 8 Sep 1985 (AB 40:151). One nearby at Zuni, New Mexico, 10 May 1981 is the only record for northwestern New Mexico (AB 35:850). Most Arizona records are from late summer and fall.

Red Knot — A fall record of two at Ganado L. 6 Oct 1979 (AB 34:188), one of which was killed by a Prairie Falcon, is the only northern Arizona record.

Sanderling — Two fall records: two at Ganado L. 23 Sep 1979 and two at Chinle 14 Sep 1980 (Monson and Phillips 1981).

Semipalmated Sandpiper — Probably a rare fall migrant at lakes in Apache Co. Definite records are for juveniles: three photographed at Ganado L. 17 Aug 1980 (AB 35:212) and one photographed at Ganado L. 11 Sep 1981 (AB 36:204). The fall 1980 record coincides with a record number of 65 individuals in southern California (Garrett and Dunn 1981).

Dunlin — Two spring records, one fall record: one at Round Rock L. 16 Apr 1985, two at Many Farms L. 21 Apr 1985 (AB 39:334) and two at Many Farms L. 4 Nov 1984 (AB 39:86).

Common Snipe — A rare and local summer resident in disturbed, wet fields in the Springerville region. Summer records include one 7 Jul 1979, two 7 Jul 1980, and one flushed from tall, wet grass and observed performing a broken wing act on 12 Jun 1981, all at Springerville. This locality represents the southwestern interior breeding limit for Common Snipe.

Wilson's Phalarope — Recent nesting records for this species from Pintail L. near Show Low, Navajo Co., in Jun 1982 (AB 39:86) support the possibility that pairs near Springerville in suitable nesting habitat in Jun 1979 and 7-8 Jun 1980 (AB 34:919) may have been breeding rather than late transients. The Show Low birds represent the southwesternmost nesting record for this species.

Red Phalarope — One fall record: one photographed on Becker L. in Springerville 5 Oct 1978 (AB 33:203).

Pomarine Jaeger — One fall record: one at Becker L. in Springerville 14 Nov 1985 (AB 40:151).

Sabine's Gull — Two fall records: one imm. on Many Farms L. 15 Oct 1978 (AB 34:188) and two (one ad., one imm.) on Tsaile L. 13 Sep 1985 (AB 40:151).

Caspian Tern — A fall record of two photographed at Ganado L. 17 Aug 1980 (AB 35:212) is the only record for northeastern Arizona.

Common Tern — A rare fall transient on lakes throughout the county. Three spring records, one on Ganado L. 29 May 1979 (AB 33:796), one on Lyman L. 20 May 1981 (AB 35:850) and one on Many Farms L. 24 May 1984 (AB 38:943) are three of only four acceptable spring records for Arizona (Monson and Phillips 1981).

Band-tailed Pigeon — Although this pigeon is an uncommon summer resident in the White Mountains, and probably the Chuska Mts., the only record in Apache Co. away from known breeding areas is of seven seen at Teec Nos Pos 27-30 May 1979 (AB 33:796).

Inca Dove — A fall record of one seen at Eagar 13 Oct 1979 (AB 34:188) is the only record for northeastern Arizona.

Black-billed Cuckoo — One summer record: one at Many Farms L. 9 Jul 1985 (AB 39:947).

Groove-billed Ani — One fall record: one seen at Lyman L. near St. Johns 24 Oct 1967 (Monson and Phillips 1981).

Chaetura sp. — The status of the species of this genus in Apache Co. is uncertain because of the difficulty in distinguishing the Chimney Swift from Vaux's Swift. Records include one at Ganado 30 May 1979 (thought to be a Chimney), one at Chinle 31 Aug 1980 and one at South Fork 10 Sep 1980. Either species is possible in this region of Arizona; there is only one reliable sight record of Vaux's from New Mexico (Hubbard 1978).

Magnificent Hummingbird — Four late spring and summer records: one seen at a feeder in Greer 14 May 1973, another at Greer 3-11 Jun 1978, one at a feeder at South Fork 16 Jun-3 Sep 1978 (Monson and Phillips 1981) and one at a feeder in Eagar in early Aug 1983 (AB 38:232).

Gila Woodpecker — A fall record of one seen in a cottonwood grove in Eagar 26 Nov 1978 (AB 33:203) is the only record of this resident species in northeastern Arizona.

Least Flycatcher — Three probable spring records (all involving calling birds): one at Becker L. in Springerville 26 May 1979 (AB 33:797), one at Chinle 19 May 1981 (AB 33:203) and one at Petrified Forest N.P. 20 May 1984 (AB 38:943).

Hammond's Flycatcher — Common transient throughout the county. Reaches its southernmost breeding limit in the spruce-fir habitat of the Chuska Mts. where a nest was photographed about 7.5 m high in a Douglas-fir on 4 Jul 1980 (AB 34:919). This site is the only confirmed nesting locality in Arizona.

Eastern Phoebe — One seen at South Fork 19-26 May 1979 (AB 32:1041) represents one of only three spring records for Arizona, all from northern Arizona in late May.

Vermilion Flycatcher — One winter record: an imm. male observed at 2130 m elevation in Eagar 25 Dec 1980 (AB 35:325).

Eastern Kingbird — Rare early fall and late spring transient at oases and in riparian woodland; about 15 records in all. Summer records suggest that this species may nest locally in Apache Co. August records do not necessarily represent transient birds as this species has been found nesting as late as 14 August in Lassen Co., California (Manolis 1973).

Scissor-tailed Flycatcher — One summer record: one at Many Farms L. 2 Jul 1985 (AB 39:948).

Tree Swallow — Reaches its southwesternmost interior breeding limit in the White Mts. (Monson and Phillips 1981). Two were carrying nesting material at Lee Valley Res. 28 May 1978, a pair was feeding young at Crescent Lake 15 Jul 1979 (Monson and Phillips 1981) and nesting was noted at Lakeside in May and Jun 1981 (Terrill pers. obs.). A summer record for the Chuska Mts. 4 Jul 1980 (Monson and Phillips 1981), may represent another nesting locality in the county.

Blue Jay — One spring record: one seen at Teec Nos Pos 30 May 1977 (AB 31:1033). The only other Arizona record is also from northern Arizona.

Black-billed Magpie — Reaches its southernmost breeding limit along Chinle Wash in the northeastern portion of Apache Co. where it is a common breeder in cottonwoods and Russian Olives south to Many Farms, and north to Dennehotso.

Black-capped Chickadee — Only one published record: one seen in riparian woodland at Teec Nos Pos 26 Nov 1976-5 Feb 1977 (Monson and Phillips 1981). This species' accidental status in Arizona (particularly Apache Co.) is perplexing as this chickadee nests commonly in southern Utah and along the San Juan River in northwestern New Mexico only 40 km E of Teec Nos Pos.

Veery — A rare and local breeder in riparian woodland along the South Fork of the Little Colorado River (Monson and Phillips 1981). This site is the only known nesting

locality in the Southwest, south of south-central Colorado (AOU 1983). An intensive search of similar habitat in the Chuska Mountains and the mountains of western New Mexico may turn up more nesting localities for this species.

Swainson's Thrush — The race *swainsoni* reaches its southwestern breeding limit along the Little Colorado River at the confluence with its South Fork, and in fir habitat in the White Mts. (Monson and Phillips 1981). Nesting in these areas appears to be a recent phenomenon and has yet to be fully documented. Hubbard (1978) lists this species as casual in summer in the Mogollon Mts. of New Mexico.

Wood Thrush — A fall record of one photographed at Sanders 6 Oct 1978 (AB 33:202) is the only northern Arizona record.

Gray Catbird — Nests commonly along the Little Colorado River in riparian habitat between Eagar and Greer, at the southwestern breeding limit for the species. Although individuals have been seen into late November (Terrill and K.V. Rosenberg pers. obs.), there is but one winter record: one seen and heard singing along the Little Colorado River at South Fork 25 Dec 1980 (AB 35:325). Extralimital records include: one at Petrified Forest N.P. 22 May 1980 (AB 35:968) and one at Chinle 22 Sep 1984 (AB 39:88).

Brown Thrasher — Two spring records, two fall records, one winter record: one at Sunrise 22 Jun 1974 (AB 28:935), one at Petrified Forest N.P. 14 Jun 1981 (AB 35:968), one at Teec Nos Pos 15 Oct 1977 (AB 32:242), one at Springerville 8 Oct 1980 (Betty Jones) and one at Springerville 24 Dec 1978.

Water Pipit — Reaches its southwestern breeding limit in a small expanse of tundra habitat on Mt. Baldy in the White Mts. Nests in Arizona only here and on the San Francisco Peaks near Flagstaff (Phillips et al. 1964).

Sprague's Pipit — One fall record: one seen and heard at Teec Nos Pos 5 Oct 1980 (AB 35:213).

Bohemian Waxwing — One winter record: about 40 at Ganado 18 Feb 1979 (Monson and Phillips 1981).

White-eyed Vireo — One fall record: one seen at Round Rock 11 Oct 1980 (AB 35:213).

Philadelphia Vireo — One fall record: one seen at Richville 5 Oct 1978 (AB 33:102). Most Arizona records are for October, as are all interior southern California records (Monson and Phillips 1981, Garrett and Dunn 1981).

Blue-winged Warbler — A fall record of one seen at Eagar 9 Oct 1982 (AB 37:210) is only the second Arizona record.

Golden-winged Warbler — Two summer records: one adult male 26 Jul 1972 and one adult female 28 Jun 1973, both near Springerville (Monson and Phillips 1981).

Tennessee Warbler — Two spring records, three fall records: one at South Fork 19 May 1978 (AB 32:1042), a singing male there 29 May 1979 (Terrill pers. obs.), one 10 Aug and one 12 Aug 1976, both at South Fork (AB 31:210), and one at Eagar 22 Oct 1978 (AB 33:202).

Northern Parula — Two spring records: a singing male at South Fork 30 May-4 Jun 1978 (Monson and Phillips 1981) and one there in May 1981 (B. Jones) represent two of only three northern Arizona records.

Chestnut-sided Warbler — Two spring records, one fall record: one at Teec Nos Pos 23 May 1977 (AB 31:1034), one at Round Rock 1 Jun 1979 (AB 33:797) and one at Many Farms L. 22 Sep 1985 (AB 40:152).

Magnolia Warbler — One spring record, four fall records: one female at Ganado L. 24 May 1984 (AB 38:944), one at South Fork 22 Oct 1979 (AB 33:202), one at Tez Nez Iah 2 Sep 1979 (AB 34:189), one at Round Rock 11 Oct 1980 (AB 35:214), and one at Becker L. in Springerville 15 Sep 1984 (AB 39:88). The 2 Sep record is the earliest fall record in Arizona and only 2 out of at least 75 fall records from southern California precede this early date (Garrett and Dunn 1981).

Black-throated Blue Warbler — One spring record, three fall records: one male at Richville 28 Jun 1981 (AB 35:968), one male photographed at Sanders 2 Sep 1978 (AB 33:202), one female at Ganado L. 6 Oct 1978 (AB 33:202) and one male at Sanders 4 Oct 1980. The September record is one of the earliest fall records for the Southwest.

Black-throated Green Warbler — Three fall records: one at Teec Nos Pos 3 Sep 1978 (photo), one at Ganado L. 21 Oct 1978 (both AB 33:202), and one at Chinle 11 Oct 1980 (AB 35:214). The 3 Sep record is earlier than any California record in fall (Garrett and Dunn 1981).

Blackburnian Warbler — Five fall records: one photographed at South Fork 5 Oct 1978 (AB 33:202), one at Ganado L. 6 Oct 1978 (AB 33:202), one at South Fork 3 Oct 1980, one at Ganado 4 Oct 1980 and one photographed at Teec Nos Pos 5 Oct 1980 (all AB 35:214).

Yellow-throated Warbler — One spring record: a singing male at South Fork 22 May-7 Jun 1981 (AB 35:851).

Palm Warbler — Two fall records: one seen at Richville 22 Sep 1979 (AB 34:189) and one at Ganado L. 7 Oct 1984 (AB 39:88).

Bay-breasted Warbler — One spring record, one fall record: an adult male at South Fork 1-3 Jun 1980 (AB 34:805) and one photographed at Ganado L. 6 Oct 1978 (AB 33:202).

Blackpoll Warbler — Two fall records: one at Ganado 14 Sep 1980 (AB 35:214) and one there 16 Sep 1984 (AB 39:88). The 1980 record was one of seven individuals that were recorded in Arizona in that year and coincided with a record number of interior southern California records that same fall (Garrett and Dunn 1981).

American Redstart — Rare but regular migrant, irregular summer resident: found in summer in riparian habitat along the Little Colorado River where it is a rare, irregular breeder. This locality is far south of the closest regular breeding populations in northern Colorado and northern Utah. Although there are numerous summer records from New Mexico, as of the late 1970s, no nesting had been documented (Hubbard 1978). In California, the only breeding record is from the extreme northwestern part of the state (Binford and Stallcup 1972).

Prothonotary Warbler — One spring record, one fall record: a singing male at Springerville 12 Jun 1981 (AB 35:968) and one photographed at Ganado L. 17 Aug 1980 (AB 35:213).

Worm-eating Warbler — Two spring records: one at South Fork 23 May 1981 (AB 35:851) and one seen at Richville 28 Jun 1981 (AB 35:968) were both later than any previous Arizona spring records.

Swainson's Warbler — One spring record: a singing male seen and song recorded at South Fork 12 Jun 1981 (AB 35:968) represents the only record of this "southeastern" warbler west of the Rocky Mountains.

Ovenbird — One spring record, six fall records: one at Teec Nos Pos 24 May 1984 (AB 38:944), *five* seen at once at Teec Nos Pos 15 Oct 1977 (AB 32:243), one at Teec Nos Pos 7 Oct 1978 (AB 33:202), one at Springerville 22 Oct 1978 (AB 33:202), one at Richville 10 Oct 1982 (AB 37:210) and one at Ganado 6 Oct 1985 (AB 40:152). The record of five is the largest concentration reported from the Southwest.

Kentucky Warbler — One spring record, one fall record: one photographed at South Fork 18-21 May 1981 (AB 35:851) and one at South Fork 1 Sep 1978 (AB 33:202). There are only two other fall records from Arizona.

Mourning Warbler — One fall record: one seen at Ganado 15 Sep 1985 (AB 40:152) is under review by the ARBC and if accepted would represent only the second record for Arizona.

Scarlet Tanager — One spring record: two seen at Petrified Forest N. P. 3-4 Jun 1979 (AB 33:888) represent one of only two northern Arizona records.

Painted Bunting — One spring record, one fall record: an adult male seen at Sanders 13 Jun 1981 (AB 35:969) and a female-plumaged bird photographed at Ganado 17 Aug 1980 (AB 35:214).

Dickcissel — One spring record, six fall records: one seen at Teec Nos Pos 30 May 1977 (AB 31:1035), one at Springerville 23 Nov 1978 (AB 33:204), one at Becker L. in Springerville 15 Sep 1984 (AB 39:88), one at Rough Rock 19-20 Sep 1984 (AB 39:88), one at Becker L. 14 Sep 1985 (AB 40:152), one N of Springerville 14 Sep 1985 (AB 40:152) and two at Ganado 15 Sep 1985 (AB 40:152).

Cassin's Sparrow — One summer record: "numerous" 30 Jun-1 Jul 1976 along Highway 61, 31 mi. N of St. Johns (Monson and Phillips 1981). May breed irregularly in grassland north of the White Mts. as it is known to breed, sometimes in numbers, in similar habitat in adjacent New Mexico.

Clay-colored Sparrow — Although records for the region have been considered as unsubstantiated (Monson and Phillips 1981), perfectly reliable records indicate that this species is a sparse transient throughout the county. Records include a singing male at Teec Nos Pos 19 May 1981 (AB 35:852), as well as numerous fall records.

Field Sparrow — A winter record of one photographed at a feeder in Ganado 10-17 Jan 1980 is the only Arizona record (Monson and Phillips 1981).

Baird's Sparrow — A fall record of one collected near Eagar 14 Oct 1934 (Phillips et al. 1964) is the only northern Arizona record.

Grasshopper Sparrow — A fall record of one photographed at Teec Nos Pos 13 Sep 1981 (AB 36:205) is apparently the only record for northern Arizona.

Golden-crowned Sparrow — Two spring records: one at Springerville 25 Apr 1953 (Phillips et al. 1964) and one at Many Farms Spring 19 Apr 1985 (AB 39:335).

McCown's Longspur — Four fall records: one 3 Oct and another 16 Oct 1976 (Witzeman 1977), two 11 Nov 1977 (Terrill and K.V. Rosenberg pers. obs.) and two 27 Oct 1983 (AB 38:232). All records are, amazingly, from the barren ground of the parking area at Becker L. in Springerville!

Lapland Longspur — One fall record: one seen at Round Rock 10 Oct 1980 (AB 35:2143). Winter records from nearby Navajo Co. suggest that this species may turn out to be more regular than the paucity of records indicates.

Smith's Longspur — One collected in the White Mts. 25 Apr 1953 (Phillips et al. 1964) provides the only Arizona record of this species.

Bobolink — Rare spring and fall transient: in Arizona, nests only irregularly in disturbed, wet, grassy fields in the Springerville-Eagar region. Formerly bred near Show Low, Navajo Co., in 1937 (Phillips et al. 1964) but was unrecorded as nesting in Apache Co. until a nest with eggs was located with up to six individuals present 16 Jun-7 Jul 1979 (AB 33:888). A pair was present at the same localtiy 7 Jul 1980 (AB 34:920). These records represent the southwestern breeding limit for this species.

Rusty Blackbird — One spring record: a female seen at Becker L. in Springerville 31 May 1981 (AB 35:852) was very late; possibly the only May record for the Southwest.

Purple Finch — Two spring records: one at Ganado 31 May 1981 (AB 35:852) and one at Richville 13 Jun 1981 (AB 35:969). This species is very rare in Arizona in spring.

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APPENDIX

The following is a list of the species of birds known to have occurred in Apache Co., with their relative abundance, seasonal status and general habitat preference. Nesting determined from *The Birds of Arizona* (Phillips et al. 1964), *An Annotated Checklist to the Birds of Arizona,* 2nd ed. (Monson and Phillips 1981) and various field notes. Species in brackets are hypothetical.

KEY TO SYMBOLS

Abundance

C = Common, regularly seen in moderate to high numbers; U = Uncommon, regularly seen in low numbers or irregularly in moderate numbers; R = irregular in low numbers; A = Accidental, recorded five or fewer times; * = nests in Apache Co.; *? = possibly nests in Apache Co.

Seasonal Status

P = Permanent resident; S = Summer resident; W = Winter resident; M = Migrant; f = fall; sp = spring; i = introduced.

Habitat

1 = spruce-fir-aspen; 2 = Ponderosa Pine; 3 = pinyon-juniper; 4 = riparian; 5 = grassland and rocky cliffs; 6 = lakes, reservoirs, sewage ponds; 7 = oases, towns, agriculture; + = three or more of the above

Pacific Loon A,fM,6
Common Loon R,M,6
* Pied-billed Grebe C,P,6
Horned Grebe A,fM,6
* Eared Grebe U,S,6 (C,M,6)
Western Grebe C,M,6
Clark's Grebe A?,fM,6
White Pelican C,M,6
Double-crested Cormorant R,M,6
* ?American Bittern R,S?,6 (R,M,6)
* Great Blue Heron U,P,4,6
Great Egret A,fM,6
Snowy Egret U,M,6
Cattle Egret A,M,4,6
Green-backed Heron R,M,4
* Black-crowned Night-Heron U,P,6
White-faced Ibis C,M, +
Wood Stork A,fM,6

Tundra Swan R,fM,6
Greater White-fronted Goose A,fM,6
Snow Goose U,fM,6
Ross' Goose R,fM,6
* Canada Goose U,Si,6 (U,fM,6)
Wood Duck A,M,6
* Green-winged Teal U,S,6 (C,M,W,6)
* Mallard U,S,6 (C,M,W,4,6)
* Northern Pintail U,S,6 (C,M,W,6)
* ? Blue-winged Teal R,S,6 (U,M,6)
* Cinnamon Teal U,S,6 (C,M,6)
Northern Shoveler C,M,W,6
* Gadwall U,S,6 (C,M,W,6)
Eurasian Wigeon A,fM,6
American Wigeon C,M,W,6
Canvasback C,M,W,6
* Redhead R,S,6 (C,M,W,6)
* Ring-necked Duck U,S,6 (C,M,W,6)
Lesser Scaup C,M,W,6
Surf Scoter A,fM,6
White-winged Scoter A,fM,6
Common Goldeneye U,M,W,6
Bufflehead C,M,W,6
Hooded Merganser A,fM,6
* Common Merganser U,S,4,6 (U,M,W,6)
Red-breasted Merganser A,fM,6
* Ruddy Duck U,S,6 (C,M,W,6)
* Turkey Vulture U,S, + (C,M, +)
* Osprey R,S,6 (U,M,6)
Bald Eagle C,W,4,6
* ? Northern Harrier R,S?,5 (C,M,W, +)
* Sharp-shinned Hawk U,S,1,2 (C,M,W, +)
Cooper's Hawk C,M,W, +
* Northern Goshawk U,P,1,2 (U,W, +)
* Swainson's Hawk U,S,5 (C,M, +)
* Red-tailed Hawk U,S, + (C,M,W, +)
* ? Ferruginous Hawk R,S,5 (U,M,W, +)
Rough-legged Hawk U,W, +
* Golden Eagle U,P,5
* American Kestrel C,S, + (C,M,W, +)
Merlin, U,M,W, +
Peregrine Falcon R,M, +
* Prairie Falcon U,P,5 (R,W,7)
* Chukar U,Pi,4,5
* Blue Grouse U,P,1
* Wild Turkey R,P,1,2
* Montezuma Quail U,P,2,3
* Scaled Quail C,Pi,5
* California Quail C,Pi,4,5
* Virginia Rail U,S,6 (U,M,W,6)
* Sora U,S,6 (U,M,W,6)
Common Moorhen A,fM,6
* American Coot C,P,6 (C,M,W,6)
Sandhill Crane R,S,fM,5
Black-bellied Plover R,fM,6
Snowy Plover U,fM,6
Semipalmated Plover U,fM,6
* Killdeer C,P,M, +
Mountain Plover R,S?,5 (R,M,5)
Black-necked Stilt A,fM,6
* American Avocet U,S,6 (C,M,6)
Greater Yellowlegs C,M,6
Lesser Yellowlegs C,M,6
* Spotted Sandpiper C,S,4,6 (C,M,W,4,6)
Long-billed Curlew R,spM,6
Marbled Godwit C,spM,6 (R,fM,6)
Ruddy Turnstone A,M,6
Red Knot A,fM,6
Sanderling R,fM,6
Semipalmated Sandpiper A,fM,6
Western Sandpiper C,M,6
Least Sandpiper C,M,6 (R,W,6)
Baird's Sandpiper U,fM,6
Pectoral Sandpiper U,fM,6
Dunlin A,M,6
Stilt Sandpiper U,fM,6
Short-billed Dowitcher R,fM,6 (A,spM,6)
Long-billed Dowitcher C,M,6
* Common Snipe R,S,5,7 (C,M,W, +)
* ? Wilson's Phalarope R,S,6,7 (C,M,6)
Red-necked Phalarope R,M,6
Red Phalarope A,fM,6
Pomarine Jaeger A,fM,6
Franklin's Gull R,M,6
Ring-billed Gull C,M,6
California Gull R,M,6
Sabine's Gull A,fM,6
Caspian Tern A,fM,6
Common Tern A,spM,6 (U,fM,6)
Forster's Tern C,M,6
Black Tern C,M,6
* Rock Dove C,Pi, 7
* Band-tailed Pigeon U,S,1,2 (A,spM,7)
* Mourning Dove C,S, + (U,M,W, +)
Inca Dove A,fM,7
Black-billed Cuckoo A,S,7
Yellow-billed Cuckoo U,fM,4,7
* Roadrunner U,P,3,5
Groove-billed Ani A,fM,7
* Common Barn-Owl U,P,7
* Flammulated Owl U,S,1 (R,M,4)
* Great Horned Owl C,P, +

* Northern Pygmy-Owl C,P,2,3
*? Burrowing Owl R,S?,5 (R,M,W,5)
* Spotted Owl R,P,1,2
* Long-eared Owl R,S,4,6 (R,spM,W,4,7)
Short-eared Owl R,spM,5
* Northern Saw-whet Owl U,S,1
* Common Nighthawk C,S, + (C,M, +)
* Common Poorwill R,S,2,3
* Whip-poor-will U,S,2,3
Chaetura swift R,M, +
* White-throated Swift C,S,5 (C,M, +)
Magnificent Hummingbird A,spM,S,2,7
* Black-chinned Hummingbird U,S,M,4
Calliope Hummingbird U,fM, +
* Broad-tailed Hummingbird C,S,M, +
Rufous Hummingbird C,fM, +
*? Belted Kingfisher R,S,4 (C,M,W,4,6)
* Lewis' Woodpecker U,S,2,4
* Acorn Woodpecker C,S,2
Gila Woodpecker A,fM,7
Yellow-bellied Sapsucker R,M,W,4,7
* Red-naped Sapsucker C,S, + (C,M,W, +)
* Williamson's Sapsucker C,P,1,2 (R,fM,7)
* Downy Woodpecker U,P,1,2 (U,fM,W,4,7)
* Hairy Woodpecker C,P, +
* Three-toed Woodpecker U,P,1,2
* Northern Flicker C,S, + (C,M,W, +)
* Olive-sided Flycatcher C,S,1 (U,M, +)
* Greater Pewee R,S,2
* Western Wood-Pewee C,S,2,4 (C,M, +)
[Eastern Wood-Pewee] A,fM,7
* Willow Flycatcher U,S,4 (C,M,4,7)
Least Flycatcher A,spM,7
* Hammond's Flycatcher R,S,1 (C,M, +)
* Dusky Flycatcher C,S,1,4 (C,M, +)
* Gray Flycatcher U,S,3 (U,fM,7)
* Western Flycatcher C,S, + (C,M, +)
* Black Phoebe C,S,4 (R,M,W,4,7)
Eastern Phoebe A,spM,4
* Say's Phoebe C,S,M, + (R,W,5,7)
Vermilion Flycatcher A,spM,W,7
Ash-throated Flycatcher C,M, +
* Cassin's Kingbird C,S,M, +
* Western Kingbird C,S,4,7 (C,M, +)
Eastern Kingbird R,S,M,7
Scissor-tailed Flycatcher A,S,7
* Purple Martin U,S,1,2 (R,spM,6)
* Tree Swallow U,S,1 (C,M, +)
* Violet-green Swallow C,S,1,2 (C,M, +)
* Northern Rough-winged Swallow U,S,4 (C,M, +)
Bank Swallow C,M, +
* Cliff Swallow C,S, + (C,M, +)
* Barn Swallow C,S,7 (C,M, +)
* Gray Jay C,P,1
* Steller's Jay C,P,1,2 (R,M,7)
Blue Jay A,spM,7
* Scrub Jay C,P,2,3
* Pinyon Jay C,P,3 (R,fM,7)
* Clark's Nutcracker C,P,1 (U,W,2,3)
* Black-billed Magpie C,P,4,7
* American Crow C,P,2,3 (C,W, +)
* Common Raven C,P,5 (C,W, +)
Black-capped Chickadee A,M,W,4,7
* Mountain Chickadee C,P,1,2 (R,M,W,4,7)
* Plain Titmouse C,P,3 (R,M,7)
* Bushtit C,P,3 (U,M,W,4,7)
* Red-breasted Nuthatch C,P,1,2 (R,M,4,7)
* White-breasted Nuthatch C,P,1,2 (U,M,W,4,7)
* Pygmy Nuthatch C,P,2
* Brown Creeper C,P,1,2 (C,M,W, +)
* Rock Wren C,P,5
* Canyon Wren U,P,5
* Bewick's Wren C,S,3,4 (U,W, +)
* House Wren C,S,M, +
Winter Wren R,W,4
Marsh Wren C,M,W,4,6
* American Dipper C,P,4
* Golden-crowned Kinglet C,P,1
* Ruby-crowned Kinglet C,S,1 (C,M,W, +)
* Blue-gray Gnatcatcher U,S,3 (R,M,7)
* Western Bluebird C,P,2,3 (U,W, +)
* Mountain Bluebird C,S,3,5 (C,M,W, +)
* Townsend's Solitaire C,S,2,3 (C,W, +)
* Veery U,S,4
* Swainson's Thrush U,S,1,4 (U,M,4,7)
* Hermit Thrush C,S,1,2 (C,M,W, +)
Wood Thrush A,fM,7
* American Robin C,P,2,3 (C,W, +)
* Gray Catbird C,S,4 (A,fM,W,4,7)
* Northern Mockingbird C,S, + (R,W,7)
* Sage Thrasher C,S,3,5 (R,W,5)

* Bendire's Thrasher U,S,3 (U,fM,3,7)
* Water Pipit C,S,1 (C,M,W,5,7)
Sprague's Pipit A,fM,7
Bohemian Waxwing A,W,7
Cedar Waxwing C,M, + (R,W,7)
* Phainopepla R,S,3,7
Northern Shrike R,W, +
* Loggerhead Shrike C,S, + (R,M,W, +)
* European Starling C,P,7
White-eyed Vireo A,fM,7
* Solitary Vireo C,S,2,4 (C,M, +)
* Warbling Vireo C,S, + (C,M, +)
Philadelphia Vireo A,fM,7
Red-eyed Vireo A,S,1 (R,M,4,7)
Blue-winged Warbler A,fM,7
Golden-winged Warbler A,S,4,7
Tennessee Warbler R,M,4,7
* Orange-crowned Warbler C,S,1,4 (C,M, +)
Nashville Warbler C,M,4,7
* Virginia's Warbler C,S,2,3 (C,M, +)
Lucy's Warbler R,M,7
Northern Parula A,spM,7
* Yellow Warbler C,S,4,7 (C,M, +)
Chestnut-sided Warbler A,M,7
Magnolia Warbler A,M,4,7
Black-throated Blue Warbler A,M,7
* Yellow-rumped Warbler C,S,1,2 (C,M, +) (R,W,7)
* Black-throated Gray Warbler U,S,3 (U.M, +)
Townsend's Warbler C,M, +
Hermit Warbler U,M,1,2 (R,M,7)
Black-throated Green Warbler A,fM,7
Blackburnian Warbler A,fm,4,7
Yellow-throated Warbler A,spM,4
* Grace's Warbler C,S,2
Palm Warbler A,fM,7
Bay-breasted Warbler A,M,4,7
Blackpoll Warbler A,fM,4,7
Black-and-white Warbler R,M,7
* American Redstart R,S,4 (U,M,4,7)
Prothonotary Warbler A,M,4,7
Worm-eating Warbler A,spM,4,7
Swainson's Warbler A,spM,4
Ovenbird R,fM,4,7 (AspM,7)
Northern Waterthrush R,M,4,7
Kentucky Warbler A,M,4
[Mourning Warbler] A,fM,7
* MacGillivray's Warbler U,S,4 (C,M, +)
* Common Yellowthroat C,S,6 (C,M, +)
* Wilson's Warbler U,S,4 (C,M, +)
* Red-faced Warbler U,S,2
* Painted Redstart U,S,2
* Yellow-breasted Chat U,S,4 (C,M,4,7)
* Hepatic Tanager R,S,2 (R,fM,4,7)
* ? Summer Tanager R,S,4 (R,fM,4,7)
Scarlet Tanager A,spM,7
* Western Tanager C,S,2 (C,M, +)
Rose-breasted Grosbeak U,fM,4,7
* Black-headed Grosbeak C,S,2,4 (C,M, +)
* Blue Grosbeak C,S,4 (C,M,4,7)
* Lazuli Bunting C,S,4 (C,M,4,7)
Indigo Bunting U,M,4,7
Painted Bunting A,M,7
Dickcissel A,spM,7 (R,fM,7)
* Green-tailed Towhee C,S,1,4 (C,M, +)
* Rufous-sided Towhee C,S,2,4 (C,M,W, +)
* Brown Towhee C,P,3,5
* Rufous-crowned Sparrow R,S,3
* ? Cassin's Sparrow R,S,5
American Tree Sparrow R,W,4,7
* Chipping Sparrow C,S,1,2 (C,M,W, +)
Clay-colored Sparrow A,spM,7 (R,fM,7)
* Brewer's Sparrow C,S,5 (C,M, +)
Field Sparrow A,W,7
* Vesper Sparrow C,S,5 (C,M,W,5,7)
* Lark Sparrow C,S,M,5,7
* Black-throated Sparrow U,S,5
* Sage Sparrow U,S,5 (R,M,1)
Lark Bunting U,M,5
* Savannah Sparrow U,S,5 (C,M,W,5)
Baird's Sparrow A,fM,7
Grasshopper Sparrow A,fM,7
Fox Sparrow R,M,W,4,7
* Song Sparrow C,S,4 (C,M,W, +)
* Lincoln's Sparrow C,S,1,4 (C,M,W, +)
Swamp Sparrow U,fM,W,4
White-throated Sparrow R,M,W,4,7
Golden-crowned Sparrow A,spM,7
* ? White-crowned Sparrow U,S,1,4 (C,M,W, +)
Harris' Sparrow R,M,W,4,7
* Dark-eyed (Gray-headed) Junco C,S,1,2 (C,M,W, +)
Dark-eyed (Slate-colored) Junco R,M,W, +
Dark-eyed (Oregon) Junco C,M,W, +
McCown's Longspur A,fM,5,7

Lapland Longspur A,fM,7
Smith's Longspur A,spM,5?
Chestnut-collared Longspur C,M,W,5
* Bobolink R,S,7 (R,M,7)
* Red-winged Blackbird C,S,6 (C,M,W, +)
* Eastern Meadowlark C,P,5,7
* Western Meadowlark C,P,5,7
* Yellow-headed Blackbird C,S,6 (C,M, +)
Rusty Blackbird A,spM,7
* Brewer's Blackbird C,S,4,6 (C,M, +)
* Great-tailed Grackle U,S,P?,7
* Brown-headed Cowbird C,S,M, + (R,W,7)
Orchard Oriole A,fM,7
* ? Hooded Oriole R,S,4 (R,fM,7)
* Northern (Bullock's) Oriole C,S,4 (C,M,4,7)
Northern (Baltimore) Oriole A,fM,7
* Scott's Oriole U,S,3 (U,M,3,7)
* Pine Grosbeak U,P,1
Purple Finch A,spM,7
* Cassin's Finch C,S,1,2 (R,M,W, +)
* House Finch C,P, +
* Red Crossbill U,S,1,2 (U,W,1,2)
* Pine Siskin C,S,1 (C,W, +)
* Lesser Goldfinch U,S,4,7 (C,M,W,4,7)
* ? American Goldfinch R,S,4 (U,M,W,4,7)
* Evening Grosbeak U,S,1 (U,M,W, +)
* House Sparrow C,P,7

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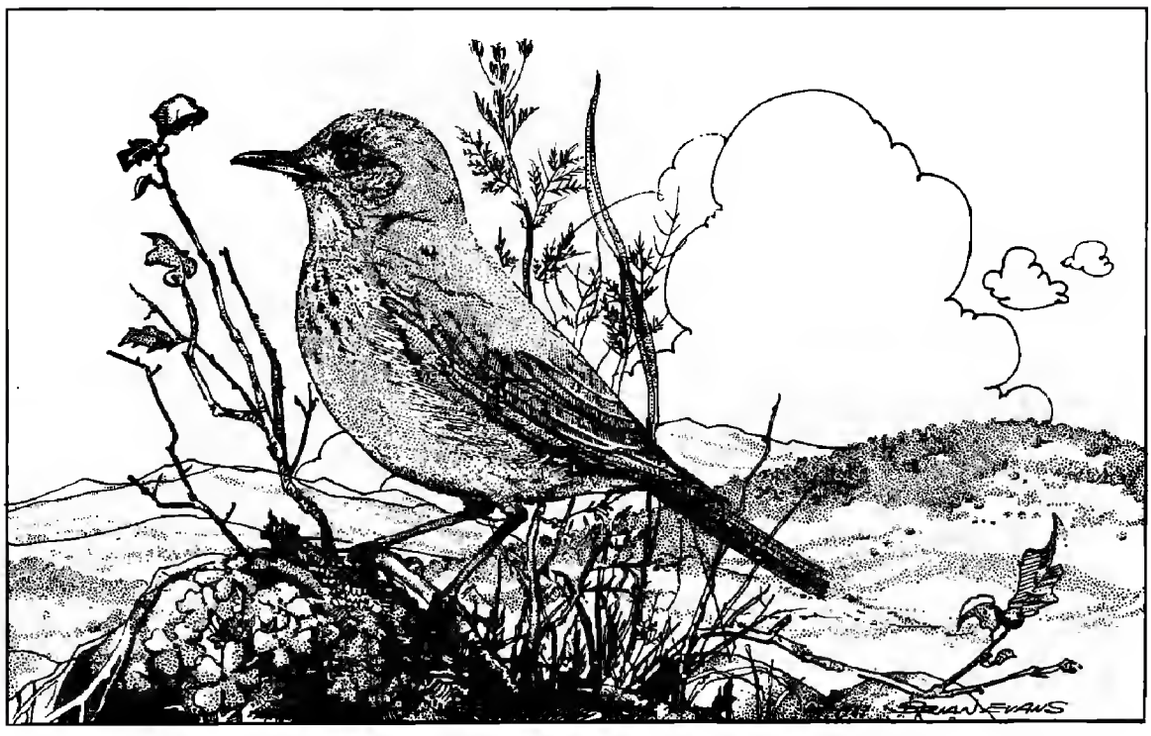

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Sketch by Brian Evans

Gray Catbird *Sketch by Brian Evans*

Use of skin for drawing courtesy of Museum of Southwestern Biology (Albuquerque, New Mexico)

NOTES

THE RING-BILLED GULL: A REDISCOVERED NESTING SPECIES IN WYOMING

SCOTT L. FINDHOLT, Game and Fish Department, 260 Buena Vista Drive, Lander, Wyoming 82520 (present address: Wyoming State Training School, Lander, Wyoming 82520)

Historically, two Ring-billed Gull (*Larus delawarensis*) nesting colonies existed in Wyoming (Conover and Conover 1981, Conover 1983). Knight (1902) indicated that this species bred on the Laramie Plains, Albany County. It was also found nesting on the Molly Islands, Yellowstone Lake, Yellowstone National Park (Skinner 1917, Kemsies 1930). I can find no evidence for the four recent Ring-billed Gull nesting colonies Conover (1983) listed for Wyoming. The intent of this note is to clarify the literature on the recent status and distribution of Ring-billed Gull nesting colonies in the state and provide details on the only known breeding location of this species in Wyoming.

In 1983 and 1984 I conducted a comprehensive survey for Ring-billed Gull nesting colonies in Wyoming. On 21 May 1984 I counted 102 adults and 70 nests of this species at Soda Lake (42° 54′ N, 106° 18′ W), about 3 km north of Casper, Natrona County. Ring-billed Gulls were nesting in two small groups on the east perimeter of a large concentration of breeding California Gulls (*Larus californicus*). Mean clutch size was 2.6 with a standard error of 0.09; the range was 1-3 eggs). I did not revisit the colony to determine hatching or fledging success. To my knowledge, this survey is the first documentation of Ring-billed Gulls nesting in Wyoming in over 50 years.

The nesting colony was on a 1.3-ha man-made island near the southeast shore of Soda Lake. Although Ring-billed Gulls may have previously nested elsewhere at Soda Lake, this island was not constructed until after the 1983 nesting season. Soda Lake is a natural lake that has been enlarged and is used by Amoco Oil Company for the evaporation of waste water from its local oil refinery. It provides significant nesting habitat for several species of colonial nesting waterbirds and protection from human intervention because the area is closed to the public.

Dominant vegetation on the island consists of Silver Sagebrush (*Artemisia cana*) and Cheat Grass (*Bromus tectorum*). Other common plants were Plains Pricklypear (*Opuntia polyacantha*), Green Rabbitbrush (*Chrysothamnus viscidiflorus*), Needle-and-thread (*Stipa comata*), and other grasses.

Other birds nesting with the Ring-billed Gulls included the Double-crested Cormorant (*Phalacrocorax auritus;* 58 active nests), Snowy Egret (*Egretta thula;* one active nest), and California Gull (1907 ± 204 (SE) active nests). In addition to these species, Black-crowned Night-Herons (*Nycticorax nycticorax*) and Caspian Terns (*Sterna caspia*) were nesting in other colonies at Soda Lake.

The Ring-billed Gull breeds in Idaho (Larrison et al. 1967, C.H. Trost pers. comm.), Montana (Skaar 1980), and South Dakota (Johnsgard 1979) but is not known to nest in other states that adjoin Wyoming. In contrast to the reported increases in breeding populations of Ring-billed Gulls in the Great Lakes region,

Washington, California and other western states (Ludwig 1974, Conover et al. 1979, Conover and Conover 1981, Conover 1983), there appears to have been no significant increase in nesting Ring-billed Gulls in Wyoming in historical times.

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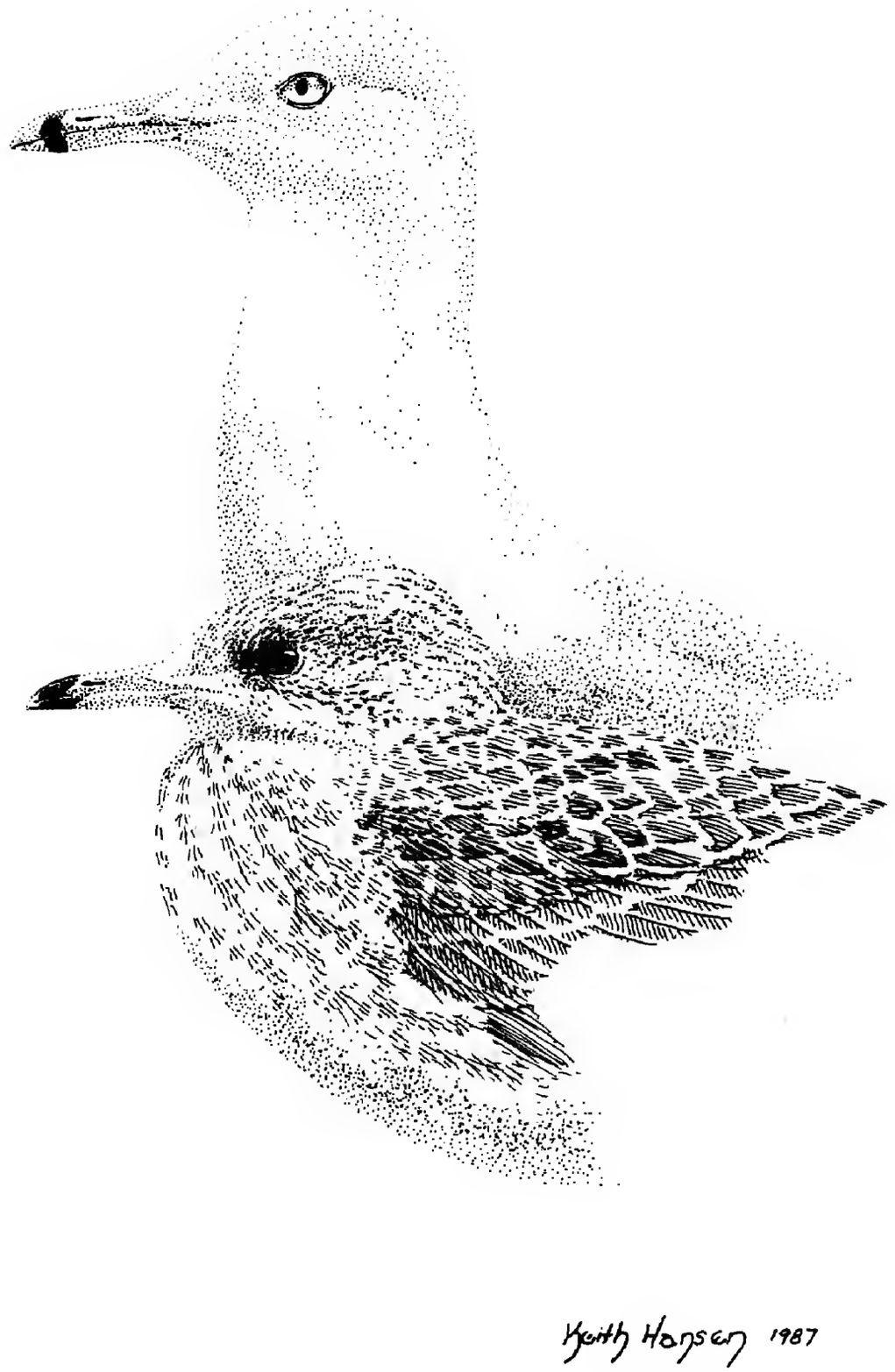

Ring-billed Gulls

Sketch by Keith Hansen

BREEDING BY A TWO-YEAR OLD SANDHILL CRANE

MARCIA F. RADKE, P.O. Box 753, Othello, Washington, 99344

WILLIAM R. RADKE, U.S. Fish and Wildlife Service, Modoc National Wildlife Refuge, P.O. Box 1610, Alturas, California 96101

Most animal species do not reproduce before a given age and cannot reproduce after a certain age (Dempster 1975). It is necessary to know age at first breeding to understand the population dynamics of a species (Caughley 1977). Studies have shown that Sandhill Cranes first breed at 3 or 4 years of age (R.C. Drewien unpubl. data, Littlefield and Ryder 1968, Walkinshaw 1973). Here we describe nesting in 1985 by a 2-year-old Greater Sandhill Crane (*Grus canadensis tabida*) on Modoc National Wildlife Refuge (N.W.R.), California.

The 2543-ha Modoc N.W.R. surrounds the confluence of the north and south forks of the Pit River in Modoc County, adjacent to the town of Alturas in extreme northeastern California. Geographically, the refuge is situated on the western edge of the Great Basin Desert at an elevation of 1322 m. Several habitat types are represented on Modoc N.W.R., including freshwater lakes and ponds, farmland and irrigated meadows, sagebrush and juniper upland, and riparian corridors. The refuge contains the largest number of nesting Sandhill Cranes on public land in California (Littlefield 1981).

In 1982, the Central Valley population of Greater Sandhill Cranes was placed on the U.S. Fish and Wildlife Service Region 1 Sensitive Species List (USFWS 1982). Because of the downward trend in the size of the Sandhill Crane population, increased emphasis was placed on the gathering of baseline data on crane production at Modoc N.W.R. Research involved monitoring of nest success and banding of chicks.

On 14 June 1983, we banded a locally hatched 5-week-old crane chick in the Town Field of Modoc N.W.R. We placed U.S. Fish and Wildlife Service band 519-96615 above the tibiotarsal joint of the crane's left leg. This crane was later captured 3.2 km south of its original capture site on Modoc N.W.R. by means of a rocket net on 22 May 1985. It was then banded with three colored plastic bands, allowing it to be identified individually at a distance. The bird was released, and later the same day we observed it on a nest in the northeast Sharkey Field of Modoc N.W.R., 1 km west of the rocket net capture site. On the basis of its behavior, smaller size, and longer time spent at the nest relative to its mate, we believed the crane to be female (Littlefield and Ryder 1968).

On the day of discovery the nest contained one egg measuring 9.21 cm × 5.28 cm. The nest was in an irrigated meadow vegetated primarily with rushes (*Juncus* sp.) and sedges (*Carex* sp.) that reached a maximum height of 40 cm. The nest itself was composed of *Juncus*. On 4 June 1985 the nest contained two eggs. The eggs hatched successfully by 23 June 1985, as evidenced by inner shell membranes and shell fragments found in the nest. Both adults, unaccompanied by chicks, were observed throughout July, indicating the chicks died before fledging. We did not determine the cause of death.

Haley (1983) studied 67 pairs of Sandhill Cranes of known age and found that they began pairing at 3.5 years (range 3.5-6.5) and did not raise young until they reached 6.5 years. Our observation is the first of a Sandhill Crane forming a pair bond and becoming a parent at 2 years of age. Breeding at such a young age is perhaps in part the bird's response to a healthy environment that has not yet reached its carrying capacity of nesting cranes.

NOTES

We made our observations while volunteering for and under the employ of the U.S. Fish and Wildlife Service, which we thank for making information available for this paper.

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Cover photo by Bruce Maxwell: Horned Puffins (*Fratercula corniculata*), Pribilof Islands, Alaska, June 1983

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (8 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $24 from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814.

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